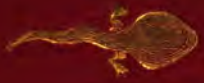
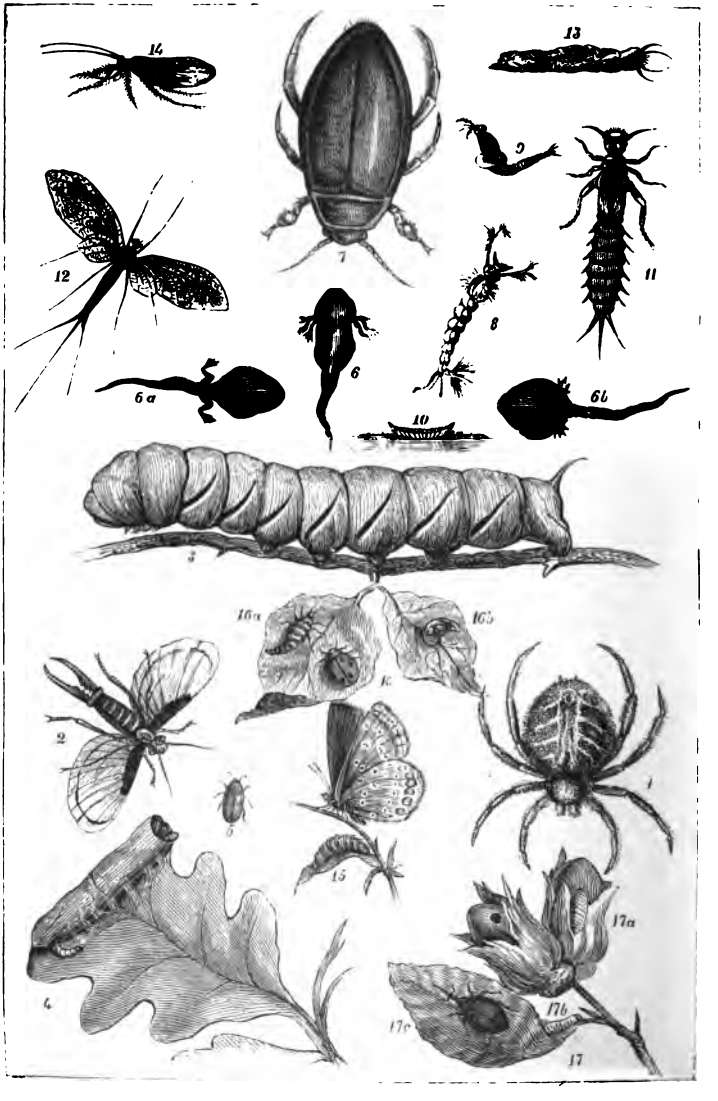



GLEANINGS FROM NATURE

By B. E. Wright.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Gleanings from Nature;

OR,

A HOME TOUR WITH AUNT BESSIE.

BY

B. E. WRIGHT.

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PREFACE.

WHEN first I began my 'Gleanings from Nature,' I had no intention of writing a preface; but now that I have completed my little work a few words seem to be necessary, to explain the object I have had in view. I have long thought that a book of this kind is wanted,—for although there are many Natural Histories, yet it appears to me that there is not one suitable for our schoolrooms, either public or private; or for the more circumscribed home circle, where many book-loving children read much by themselves.

My 'Gleanings' are taken from Nature, as loved and studied in our family circle, and borne out by anecdotes and facts which have come under our observation. I have also selected from

various books such information as I thought would be suitable for my purpose: endeavouring to condense and simplify, so as to make my 'Home Tour' both interesting and instructive.

My desire has been to lead my young readers from the study of Nature to Nature's God, and to excite in their minds a reverence and love for the gracious and Almighty Creator of so many marvellous works.

Thuxton Rectory, *June* 1871.

GLEANINGS FROM NATURE.

CHAPTER I.

'At last, dear Aunt Bessie, we have come for our long-talked-of visit to you, and we hope that you have not forgotten your promise to take us for a home tour, although I am sure that we have been round your garden and premises so often that there can scarcely be anything we have not seen. Annie and I have frequently wondered what there can possibly be to amuse us for a *whole week;* we are always so tired of *our* garden at home; I am sure we know every bush and flower in it.'

'I have not forgotten my promise, dear Harry,' I replied; 'we will start on our little tour directly after breakfast to-morrow morning, and I hope I shall be able to make it both interesting and instructive to you and to Annie, so that when you return home your feelings may be completely changed; and I trust you will then find your own garden no longer a dull place, but a delightful

spot, wherein you may spend many happy hours together.'

* * * * * *

'What a lovely morning for our garden treat, Auntie; will you go with us *now?*' were the first words uttered ere breakfast was really finished.

As I did not like to damp the eagerness of my little nephew and niece, I consented at once to their request, and told them to fetch their hats.

While they were gone I provided myself with a basket, in which I placed a trowel, a small box, a microscope, and a large glass bottle with a wide mouth; in my other hand I held a small net.

'Oh, Auntie, what can be the use of all those funny things?' was the children's first exclamation.

'Have patience, and you will see,' I replied; 'we shall not want them all to-day, but by the time our week's tour is finished you will find that each one will be required.'

Off rushed the children in eager haste.

'Stop, stop!' I cried, standing on the step of the verandah; 'you have passed a most ingenious and intricate work in your hurry.'

They were soon at my side again, looking rather doubtful.

'I cannot see anything worth looking at in this verandah; nothing but the large white stones, and a few flower-pots,' said Harry, who was always the

first to speak, being three years older than his sister, and, of course, thinking himself very superior.

'If you look closer at those large white stones you will see a very wonderful work.'

'I only see a spider's web,' he replied, 'and a great, ugly, black spider, hurrying away as fast as he can.'

At these words Annie shuddered and drew back.

'I can't bear spiders!' she said; 'they are so horrid, and I am always afraid of them. I would rather not look at the ugly thing, but start at once for our tour.'

'Spiders are perfectly harmless, my dear; and I hope, when I have told you a little about them, that you will feel more interested in spiders for the future, and no longer be afraid of them. There are a great many different kinds, but we will speak first of the garden-spider (see fig. 1), as this web is his home and his snare. Sometimes he sets his trap amongst stones, and frequently on plants and hedges. In the upper part, you see, is a long passage, concealed in which the old spider sits, watching with the greatest patience for any heedless little insects that may be caught in his trap.'

'I wish he would come out of his hole,' exclaimed Harry; 'it is so stupid of him to keep there when we want so much to see him.'

He had scarcely finished speaking when a poor, luckless little fly became entangled in the maze of

threads, and struggled in vain to escape. Indeed, the spider gave it no chance of getting away: in a moment he rushed upon it, and, poisoning it at once with one pinch from his fangs (at the back of which lies his little poison-bag), and then winding his victim round and round with fine threads, he dragged it into his hiding-place to eat it at his leisure.

'Spiders have eight legs, my dears, which are each divided into seven joints, and armed at the ends with two sharp points. The number of their eyes is various. The gossamer threads are truly marvellous, for, although some are so fine that they are invisible except when reflecting the sun's rays, yet they are each formed of about four thousand separate fibres. They have an ingenious method of strengthening their webs when the wind is very high, and likely to stretch them to a dangerous extent: they will then hang on their nets pieces of wood, stone, or some other substance, to make them steady and substantial. In some countries, we are told, there is a spider which makes a web so strong that it will catch birds.

'Your uncle once saw a large bee caught in the net of a small spider. He thought the bee would certainly break the threads, as it struggled very much, buzzing furiously all the time. The spider seemed considerably startled, and much afraid of his visitor; he darted forwards at it, and then went back again, apparently in great fear. At length,

however, he evidently thought his web would be broken; and, making up his mind to the contest, he rushed frantically at the bee, and vanquished his foe.

'I will now tell you of a clever little insect, called the mason, or trap-door spider. It makes a pit or cavern to the depth of one or two feet, which is lined carefully throughout with silken threads, gummed to the walls. The entrance to this hole is safely secured by a lid, or door, which, marvellous to relate, moves on a hinge, and can be shut quite closely. It is difficult to find their nests, as the outside of the door is covered with earth, and thus it looks like the ground. There is another spider, that makes a kind of tent, in which it lives and brings up its young. The outside of this tent they carefully secure, making it look dirty, to hide it from view; but inside it is quite clean and white. You see, my dear children, what wonderful instinct God has given to these insects.

'Then there is the water-spider, which lives in ponds and ditches, and is a most provident little insect. The female makes her nest very like a diving-bell; she lines it with silken gossamer, and fastens it securely to the surrounding plants, by tiny threads of her own spinning; in this snug nest she places her eggs, and watches for prey; here also, safely shut up, she passes the winter.

'Another kind of spider lives in, or under water,

although most curiously it can scarcely be called a *water*-spider, for it cannot actually live in water; but to enable it to pass its life there in a pleasant manner, it makes use of old shells of water-snails. As soon as the spider enters the shell, she closes the opening with a web, which keeps out the water; then she fills her home with atmospheric air. Sometimes the shell with its inhabitant, is lying at the bottom of the water, but it can float easily by the help of the air within, and the little creature often rises for the purpose of catching prey; thus this clever spider is able to get food, for the insects think it is only a water-snail. But I shall tire you.'

'Oh, no, Auntie, we are not at all tired, and I shall never be afraid of these wonderful little spiders any more,' answered Annie. 'It was Nurse who frightened me about them. She also told me that she had seen a spider flying through the air; have *you* ever seen them fly, Aunt?'

Harry burst out laughing, 'What a little goose you are, Annie, who ever heard of a spider with *wings!*'

'Do not be so sharp, Harry,' I answered, 'it is a very easy mistake to make; some spiders have a most remarkable power of shooting out fine threads in the air, upon which they mount and ride, suspended; and thus people have mistaken them for *flying* spiders. When we go indoors I will read to you both a touching account of a poor French

prisoner, whose only amusement and companion in his lonely captivity was a *spider;* when this was discovered, the inhuman soldiers actually deprived him of his sole source of comfort and interest. So much was the poor captive affected by their unkindness, that he shed many bitter tears for the loss of his only friend.

'I will now tell you how a spider was once the means of saving a poor woman's life, and of bringing death upon her would-be murderer; who, you will be surprised to hear, was her own husband. He was so wicked that he thought he would poison his wife, and this was the plan he tried. It happened one morning that she cut two pieces of pie, for her own and her husband's breakfast, and then went out of the room; directly she was gone, this bad man mixed some poison in her plate, and then feeling that he could not stay to see her eat it, he made an excuse to go to his work-shop for a few minutes. While he was gone, a spider fell into the woman's plate, which so disgusted her, that she could not eat its contents; but thought, that as her husband knew nothing about it, she would change plates with him; she carefully arranged the pieces of pie in the same form as her husband had arranged them, and then sat down to eat her breakfast. When this wicked man returned, he made a hasty meal of the food which he had mixed with poison, and thus became his *own murderer!*'

'I am so glad his horrid trick was visited upon himself,' said Harry. 'He must have been a wretch to try to murder his wife. What a number of interesting things you have told us about the poor despised spider!'

'I wonder what that ledge is at the top of the porch, Auntie?' observed Annie; 'it looks as if there had been a nest upon it.'

'So there was, my dear; for many years a pair of pretty little swallows built there, and I had the ledge put up for their convenience. They were such dear little birds, and became quite tame. They always arrived early in April, and generally on the very same day of the month; as it is written in Jeremiah, "The swallow observes the time of her coming." I suppose your mamma has told you that every autumn they go away from our shores. They leave in large flights for Africa, as they cannot live here in the winter, on account of the scarcity of insects, and not from the cold entirely, as is generally supposed. These delicate little birds never miss their way; our Heavenly Father takes the greatest care of them during their long journey across the seas. We are told by our Saviour "that not even a sparrow is forgotten before God." I will find these texts for you in the evening.'

'But where are your swallows now?'

'I am sorry to say, dear Annie, that my pets never come as they used to do. One year the house

and the door were painted, and they have never built here since. I have always felt very sorry about them. It was most amusing and instructive to watch how carefully they built their nest, and the pains they bestowed upon their young. It was really marvellous to see the number of insects they brought to the little ones in a day; it appeared quite a task for the two old birds to satisfy their wants; each time that they returned, *every* little mouth was opened wide, and such a chattering; but the parents always fed them most carefully in proper order; never the same twice running, each one in turn. They looked very much like little owls. How delighted were the old birds, when their children were old enough to try to fly; how anxiously they watched them for fear they should fall; at first they only scrambled just outside the nest, and sat on the wooden ledge, seeming to think this a great accomplishment; then they would try a short distance for flying, and at length would disappear from our sight; but for the first few days they always came back to their nest to sleep, and what a talking they made about it! There was not room for all inside, some were obliged to sleep on the ledge. I miss my little friends very much, for they were a great amusement and interest to me during the hot summer months, when I always sit for hours together in the verandah.

'When we go to church on Sunday, I will show

you a nest in the porch, which was built there last year; and the poor young swallows were starved to death; for unfortunately the parent birds flew into the church during service, and they were shut in. It was a sad sight which met my eyes on the following Sunday; there were the four little things quite dead, their heads hanging over the nest, and the poor old birds lying dead also in the church.'

Annie's eyes filled with tears at this sorrowful tale, for she was a very sensitive child, therefore, to put her in good spirits again, I asked her whether she would like to hear an account of a fight between some swallows and sparrows. Harry was very eager to hear about it at once, so I promised to tell them as much as I could remember.

'The account that I am now going to give you was narrated by the famous naturalist, Baron Cuvier, and the interesting scene that he witnessed caused him to turn his attention to the study of Natural History; we are greatly indebted to him for much valuable information. When he was a young man, he was in the habit of opening his bedroom-window every morning at daybreak. One fine day in spring he observed that a pair of swallows had begun to build in the corner of his window; he took a great interest in watching them at their work. The male bird would bring moist clay in his beak, which the female kneaded, and adding some straw or hay, they soon built a snug nest with great skill.

'When their work was completed they went away for about a fortnight, and a great change occurred during their absence, for a pair of sparrows took possession of the nest. Young Cuvier noticed that the unlawful possessors were very cunning, for both of them never went away at the same time, one always remained in the nest, as if on guard, with its head and large beak defending the entrance. When the poor swallows returned, you can fancy their dismay and indignation: the male bird rushed upon the nest to try and chase away the usurpers. But what could a poor, delicate little swallow do against the strong beak of his formidable enemy? He was soon compelled to retire, with his head and throat half stripped of the feathers. He and his mate appeared to consult together, and then they flew away, and quickly disappeared. Cuvier now thought that he should never see them again.

'Soon the female sparrow returned, and her husband evidently told her all that had happened during her absence. They both seemed highly delighted at their clever trick, and chattered about it for a long time. Presently the female flew off again, and hurriedly collected a larger quantity of food than usual; she laid in a good supply, and then popped into the nest with her partner, and now two strong beaks defended the entrance. Cries, however, began to be heard, and a large number of swallows were to be seen, gathering together on the roof of an adjoin-

ing house. Cuvier recognised the ill-treated couple amongst them, and they appeared to tell each fresh arrival of the treacherous conduct of the sparrows.

'In a short time about two hundred swallows were collected; but whilst the army was debating, suddenly a cry of distress was heard. A young enterprising swallow, instead of joining in the consultation of his party, had been chasing some flies, which were buzzing before the window, where a net was hung to catch sparrows, and one of his claws had become entangled in the meshes. Immediately that his cry rang through the air, about twenty of his comrades flew to the rescue, but their efforts were useless, and the more the poor prisoner struggled to free himself the greater became his entanglement. And now a larger number of swallows took wing to lend their aid also, and most ingenious was the plan they adopted. First they retired about a hundred yards, then returned quickly, and each one gave a sharp peck at the net. Not one missed its aim, and after half an hour's persevering labour the string broke, and the bird was free.

'During this proceeding the sparrows remained perfectly quiet in the home which they had gained by such underhand means. The company of swallows flew off, but in few minutes they again returned, each one carrying in its beak a quantity of mud, which was quickly discharged at the nest and sparrows. They fired their shots at some distance off,

which prevented the enemy from inflicting blows upon the besiegers. The mud-storming was zealously kept up, and though the sparrows made desperate efforts to defend themselves, the swallows succeeded in covering over the entrance. But the deadly revenge was not yet completed, for they continued to bring moist clay, until they had built a second nest over the opening of the first. The work was carried on by the whole company of swallows, and then at once occupied by the late dispossessed, but now triumphant birds.'

'I am so glad the dishonest old sparrows were punished,' said Harry; 'how I wish I could have seen the fight; do not you, Annie?'

My little niece seemed rather doubtful as to whether she would have liked to have seen the sparrows suffocated, although she quite agreed with her brother that they richly deserved their punishment.

'As you are both so much interested in Cuvier's tale,' I continued, 'I will now tell you the few remaining words. The following spring the swallows returned to their old home, and carefully repaired the nest, which was much injured by wind and rain. One morning when they were on the wing, a hawk pounced upon the male bird, and was carrying him off, when he was shot dead by Cuvier. He took the poor swallow out of the claws of the hawk, dressed his wounds, and then placed him in the

nest. The mate nursed her husband most carefully, never leaving him, except to procure food. But, alas! she could not save his life; his strength visibly declined, and he soon died. From that hour his loving wife drooped, and pining away, quickly followed her companion.

'You see, my dears, what a strong attachment birds feel towards each other, and it is cruel and heartless to deprive them wilfully of their nests and young ones, as many children do, in the most thoughtless manner.

'Swallows sometimes build in very curious places; for several years a pair of these birds made their nest over a large bell, which was constantly ringing. Another pair made choice of a bracket, on which a lamp was placed, and though it was taken down twice every day, and the servants continually passed and re-passed, yet they were quite indifferent to the interruptions, and built there for three or four years.' (See Bishop Stanley's *History of Birds.*)

'Oh, here is such a splendid large fly! I will give him to our old spider before we start for our garden walk,' suddenly exclaimed Harry; but to his surprise and consternation, as soon as he touched 'his *splendid* large fly,' it crumbled into *dust!*

'Why, aunt, how curious! This fly looked *exactly* as if it were alive. What made it drop to pieces?'

'It is eaten by a fungus, which seizes it, consumes every part of its body, and leaves nothing but the empty case clinging and glued to some substance, like this on the pane of glass.'

'I certainly thought it was alive. How very funny it seems! Are flies always killed in this way?'

'Oh, no, only a few of them. They are always very short-lived, and only enjoy a few months' existence. The fly lays from sixty to eighty eggs, at each of four different times. You will be surprised when I tell you that at this rate, in one season, a pair of flies will produce (including the various offspring of all their children and children's children) somewhere about two millions of flies.'

'What makes them hum?'

'It is owing to the quickness with which they move their wings; they usually flap them about six hundred times in each second; but if they are frightened, they will increase the speed to nearly four thousand times! Their eyes, five in number, are placed in this way: one large eye on each front side of their head, and three small ones on the top: the two large eyes are so divided as to contain four thousand distinct organs of sight, as they are called. I could tell you more about the fly, but you are not old enough to understand it.'

'It seems very wonderful that flies can walk upon slippery glass,' observed Harry; 'I suppose their legs are formed in some peculiar way?'

'You are quite right in your idea: they are enabled to keep their hold on glass, or on the ceiling, by means of a sticky substance, a kind of glue, which prevents them from falling.'

'*Now* we will start upon our tour, shall we, Auntie? But what a number of interesting things we have found already only just on the *door-steps;* I can believe now that the garden may indeed be full of wonders.'

'Yes, Annie; if we really are on the look-out for God's wonderful works, we can scarcely stir a step anywhere without being rewarded for our search. The more we study nature in every way, the more we shall see the power and love of God, in the care which He takes of the smallest of His creatures. But I see you are in a hurry to start.'

At these words the children rushed off again, and once more I called them back.

'Oh, Auntie, we shall *never* get into the garden.'

'I am afraid we shall not have time this morning, for we have already spent nearly two hours; and we must not do too much at first, or you will be tired; and I have still another wonder to show to you. What do you see on this rose-bush, my dears?'

'Flowers and thorns,' answered Harry.

'Can you see *nothing* else? Well, I suppose I must show you. Now look closely at this leaf, and

you will observe a most intricate track, made by an insect called the leaf-miner: it is a *very small* caterpillar, and it makes its home between the layers of leaves, eating its way along in this remarkable manner. The white, waving line is, at its commencement, as fine as a pin's point, and gradually becomes wider and wider as the tiny creature increases in size.'

'What is this little brown thing at the end of the curious white marks?'

'That is the chrysalis, Annie, and it will probably turn into a very beautiful little moth, one of the smallest of the moth tribes. Sometimes, two caterpillars take possession of one leaf, and each generally keeps its own track.'

'Here is another of the leaves,' exclaimed my little niece, 'but it is not half so nicely marked.'

'No, here the leaf-miner has not nearly finished his winding-path. You see this one is making his intricate line quite on the edge of the leaf, but they generally seem to prefer the centre; taking care to avoid the veins. I have a magnifying glass with me, which will enable you to see this minute insect; we will gather the twig and leaf, with the chrysalis in it, and place it in water, under a tumbler, and then we shall find what it changes into, for they do not all become moths, but sometimes they turn into beetles, or into flies; we will take the leaf at once, for really, my dear children, we must go in-doors now, and

to-morrow morning we will begin our garden expedition. I daresay you have seen enough of *door-step* curiosities; although, even now, I do not think we have examined everything here; for I could tell you much that would interest you, about these little black ants, which you see hurrying away so swiftly and quickly; and also about the earwig, which is creeping up the walls; and the pretty little lady-bird on this leaf; but I think you have learned quite enough for one day, and I will tell you about ants, earwigs, and lady-birds at another time.'

CHAPTER II.

THE following morning, when I went into Annie's room, I found her already wide-awake, and sitting up in bed with a surprised expression on her face. As soon as she saw me, she exclaimed, 'Oh! Auntie, listen to that music; I cannot think what it is, or who can be playing at this early hour. I have heard it for some time, what can it be?'

I smiled at the child's eagerness, and replied, 'It is caused by a snail, my dear.'

'A *snail*,—oh! Aunt, you must be joking.'

'Indeed, I am not; if you look on the window-pane you will see this funny musician, crawling along, and making music as he goes. I will call Harry to see and hear it.' My nephew was as much surprised and pleased, as his sister, with the performer; as soon as it reached the top of the window, the music ceased.

'What a curious animal a snail is!' remarked Harry; 'it seems such a singular plan to carry their houses upon their backs.'

'It is, indeed, very remarkable, and though it

looks so light, and may be easily crushed by us, yet it forms a solid and safe hiding-place for the snail. When winter draws near, it retires into the shell, and closes up the opening with a kind of glue, which comes out of its own body. Thus enshrouded it passes the cold season in safety. When spring commences, it opens the door, and again crawls about at its pleasure.'

'He is now going to put out his horns,' said Annie.

'They are not exactly horns, but small tubes: or we might call them *telescopic* eyes, for they have a sort of glass at the end of each. The snail, by raising these tubes, is enabled to see plainly, which would otherwise be impossible, as they creep upon the ground, and have the weight of their apartments upon them, and they would thus be quite prevented from seeing, if it were not for the power they possess of elevating their beautiful eyes, and turning them about in every direction.

'When the snail first leaves the egg, it is furnished with a small, soft shell, to which it adds ring after ring, with the glue from its body, until the shell reaches its full size; the first coil always remaining in the centre. They have no feet, but move along by the aid of two strong, muscular skins, which they can lengthen, or draw in, as occasion requires. These silvery marks, which you see, are always left by the snail as he crawls along; they

prevent him from falling, and thus this sticky fluid serves for several purposes. The mouth is just below the two smallest horns; the upper jaw is horny, and has at its edge a well-rounded tooth, notched like a saw, which enables them to nibble the leaves of different plants; the tongue is also tipped with a hard substance.

'Are those little black spots at the end of the horns, his eyes?' inquired Harry.

'Yes, my dear, he is very obliging in putting them out for us to see. Snails are found in all parts of the world, and there is a very great variety of them, of many sizes and colours. The largest and most highly coloured are to be seen in Asia, and some of the southern parts of Europe, where they are two inches in diameter. In ancient Rome these creatures were considered a great delicacy; rich people had snail-stews, and they bred and fattened them for this purpose. In many parts of the Continent they are still reckoned a luxury: this species is called the *edible* snail. In England some people are very fond of a small, snail-like fish, called the periwinkle. It is caught in salt-water, and I think them very nice, although many persons feel greatly disgusted at the idea of eating what they term sea-*snails*. But now, make haste down to breakfast, and this morning we will not allow anything to prevent us from beginning our "garden-tour."'

* * * * *

We had scarcely stepped outside the door, when we saw something moving in the grass in front of the house; Harry darted forwards eagerly, and succeeded in capturing a fine little mole, which he brought to me in great triumph, exclaiming, 'What *is* this funny little animal?'

'It is a mole; you are indeed *most* fortunate in finding it: they are very rarely to be seen above ground; although we often see the traces of their laborious work; they are busy, painstaking, and industrious creatures. I fancy I can see its home, at the end of the lawn; we will go and examine it; be careful how you carry your treasure, Harry, for they are apt to bite.'

My little nephew was alarmed at hearing this, and would have put down the mole; but I told him that it was too frightened to hurt him. 'We will place it in your hat, if you like.'

Harry followed my advice at once, and drew a sigh of relief as soon as it was out of his arms.

'How soft and thick his fur is,' he said; 'it feels like velvet: our gardener told me that they were blind; I suppose this is the reason why I caught it so easily.'

'It is a great mistake to accuse them of being blind.'

'But I cannot see its eyes,' said Annie.

'No, my dear, they are very small, and so hid-

den by their thick fur that they are not easily seen; hence people generally come to the conclusion that they are blind, without troubling themselves to examine the little creature more carefully; but I will now convince you to the contrary.'

'Oh, what dear little eyes, and how soft they look! Poor little thing! it seems so frightened. Shall Harry put his hat down, and see what it will do? I wonder how it gets in and out of its home. I see no opening anywhere.'

'They burrow under the ground, and very rarely leave their house, as this one has done. I should like you to examine the mole more carefully before we part with it; their form is very peculiar, just suited for their underground work and habits. Look at its fore limbs; they are very short, supported by strong shoulders, and wielded by muscles of enormous strength; they resemble broad hands; the fingers are so small they can scarcely be seen, but the nails are long, and of great strength, wonderfully adapted for tearing up the earth; it is also assisted in this work by its long-pointed head. The hind legs, you see, are very feeble, and the poor little animal is almost helpless *upon* the ground, but underneath the surface its movements are quite different. It has very quick hearing, and its soft fur lies so close and flat that the mole can easily retreat through the narrow windings of its underground home.'

'I will set it down now,' said Harry; and, suit-

ing the action to the words, he carefully shook his cap on the ground, close by the heap of mould which composed its home. In a few moments the mole began to burrow with his fore-paws, and with a quickness which quite astonished us, he scooped out the earth, and disappeared from our view.

'I am sorry now that I let him go,' remarked Harry. 'I should have liked to have kept him for a pet.'

'You would not have cared to keep it, I think, my dear boy, for they are most ferocious little animals, and bite very savagely. I have been told that if several of them are shut up together, and badly supplied with food, the stronger ones will eat the feebler. A gentleman once put in a glass case a mole, a viper, and a toad, when the mole killed both the viper and the toad.

'Their favourite food is the earth-worm, of which they devour a surprising number; they also eat mice, frogs, snails, lizards, and even birds. They have an enormous appetite; when they have satisfied their cravings they take a long sleep, and then wake up ready for another meal. Sometimes these poor harmless animals are hunted and killed by men, who make their living as mole-catchers; but most of our farmers have found out that it is a mistake to destroy them, as they eat myriads of insects which would spoil the crops.

'The earth-worm has a remarkable instinct of

self-protection, for when it feels the ground shaking from the near approach of the mole, it makes for the surface as quickly as it can, where it knows its hungry enemy will not come after it; but, alas! for the poor worm, this instinct is met by another instinct, that of the thrush; and it only flees from the mole to be eaten by a fresh foe; for the bird, knowing what the worm will do, taps upon the ground with its beak, and makes such a shaking that the silly thing, thinking a mole is after him, comes to the surface, and is quickly devoured. I have often seen the thrushes tapping in this way, and securing one victim after another.

'Even these poor despised worms are wonderfully formed; for, as far as can be ascertained, they have neither sight, hearing, nor smell, and we cannot even see the mouth without a magnifying glass. It is a great eater, though it has no teeth; its food consists of moist earth, in which it bores its way. It possesses hundreds of little hooks, which serve the purpose of feet, and with these hooks the worm clings fast to its hole when any endeavour is made to pull it out; so tightly does it hold, that the body often breaks in the attempt.

'The soil of our garden beds is much improved and enriched by the labours of these little diggers, and our lands are also made very fertile by them. In one pasture field, in the course of fifteen years, they turned up two inches and a half of mould over

the entire surface; in another field, in about eighty years, thirteen inches of rich soil accumulated by their exertions.'

'Why does the grass look so dead here?' inquired Harry.

'I will soon show you if you give me the trowel,' and turning up one of the dead sods, a mass of grubs of all sizes were disclosed to his astonished view, the roots being completely covered with them.

'What horrid-looking things!' said Annie, drawing back; 'what are they?'

'The grubs of the cockchafer, my dear; it is one of the most destructive of the insect tribes.'

'I know what they are,' remarked Harry; 'they will turn into summer beetles. You remember how frightened you were last year, Annie, by one of them clinging to your hair?'

'You will be surprised when I tell you that the female lays about one hundred and fifty eggs, which she deposits in the ground, to the depth of some six inches; from these eggs, in fourteen days, appear little white grubs, which are furnished with strong jaws; they grow very slowly, taking three years before they become as large as *this* great one; they eat voraciously of the roots of corn and grass. In the middle of the last century many crops were quite destroyed by their ravages, and the farmers swept up bushels of them. In the year 1574 they appeared in such extraordinary swarms that the river Severn

was covered with them, and their dead bodies prevented the working of the mills.

'During the cold months these grubs which you now see will descend to the depth of about six or eight feet, and this course they pursue each winter of their caterpillar state.'

'Oh, Auntie, come here!' exclaimed Harry; 'this tree seems *alive* with earwigs, and here are some perfectly *white* ones too. How very curious!'

'Yes, my dear; and look at these empty skins: it appears as if the white earwigs had just come out of them; for I took some home with me once, and in the course of a few hours they turned black, like the others. We will put some in our box, if you like, and then you can watch them.'

'No, thank you, Auntie,' answered Annie; 'I would rather not take them home, I am always so afraid of their getting into my ears or into my brain.'

'It is a great mistake to suppose that they will get into your ear; the secretion inside is a perfect guard against their entrance.

'Earwigs collect together in large swarms under the bark of trees; if you tear off a piece, you will probably find plenty more of them. I have often found trees quite lined with these insects.

'The earwig is naturally very timid, and when frightened it does exactly what the ostrich is said to do, namely, thrust its head into the first ima-

ginary retreat that comes in its way, and then foolishly think itself safe, when in reality all the hind part of its body is exposed to the attacks of its enemies. Your uncle has often told me, when he has been shooting moor-hens, that they adopt this plan, and poke their heads into rat-holes, &c.

'The earwig is a very patient and attentive mother; she devotes herself entirely to bringing up her numerous children, of which there are sometimes fifty. They follow her wherever she goes, and retreat under her when alarmed, as chickens do under the old hen's wings. If her eggs are disturbed and scattered, she collects them together again in the most careful manner, carrying them back one by one; she never leaves them for a moment, sitting over them as patiently as a bird does whilst hatching. In about six weeks the eggs burst open, and little white grubs appear; after a time these change into another form called the chrysalis state, from which they finally emerge as perfect insects.'

'Why are they called earwigs, Aunt?' asked Annie.

'Probably because their wings resemble the shape of the human ear.'

'*Wings?* I cannot see any sign of wings, Auntie.' (Fig. 2.)

'Very likely not. Few people are aware of this fact, as they seldom fly except in the evening, when I have often caught as many as a dozen with one

sweep of my net. Their wings are large and extremely beautiful, being quite transparent; they are closely packed under two cases, and it is quite marvellous into how small a compass they fold. We will go out this evening and catch some. I daresay you have noticed my insect-net in the hall. We shall probably find other objects to interest us then. We must not stay any longer here, but will go into the Park at once.'

'Look at that dear little squirrel!' exclaimed Annie; 'we will run after it, Harry.'

Off started the children, but they soon returned, looking disappointed.

'The squirrel ran so quickly that we could not catch him; he climbed up that tall tree, and then leaped from the top into the boughs of the next one, and soon disappeared.'

'Squirrels are very industrious little creatures; during the summer months they lay by a large stock of nuts and other food as provision for the winter; their usual storehouse is the trunk of a hollow tree. They often build their nests upon the topmost boughs, leaving an opening in the upper part, which they cover with a sort of roof to keep out the rain. In Poland, Russia, and North America, there are what are called flying squirrels.'

'What is that pretty little bird fluttering over some nightshade?' asked Harry.

'It is not a bird, but a beautiful and peculiar

insect called the humming-bird moth, on account of the humming noise it makes with its wings. It feeds on the nightshade, which, as you know, is a deadly poison to us.'

'How I wish I had your butterfly-net, for then I would catch it! I will try and knock it down with my hat.' But again poor Harry was disappointed, for it flew away far above his head.

'Now, my dear children, we must return home, and we will finish the Park curiosities to-morrow.'

My little companions followed me back with sorrowful faces; but when I reminded them that they were going out again in the evening, their spirits rose considerably, and they talked of their anticipated treat the rest of the day.

As soon as it was getting dark we sallied forth, armed with the net and a box for any treasures we might find.

'Look, look!' exclaimed the children, as we reached the lawn; 'the grass is on fire.'

I was amused at this idea, which seemed very natural, and replied, 'The bright spots of light are caused by a small *beetle*, falsely called the glow-*worm;* we will place some in our box, and then in the morning you will see that they no longer shine. It is not known by what means they give the light, but it has been ascertained that the glow-worm shines brightly in *warm* water, and that the light becomes extinguished in cold water.

'The *grub* shines if touched, but very feebly; it has a great liking for the *largest* snails, which it seizes when the poor animals are crawling along. The snail often draws its foe into the shell, but the devourer, not at all dismayed, continues its ravages unchecked.'

'I do not wish to touch them, for fear they should burn me,' said Annie.

Harry burst out laughing, and seizing some, placed them in triumph in our box.

'Lend me your net, please, Aunt. I am going to try and catch a bat, which continually flies so swiftly past us.'

After many unsuccessful trials Harry gave the net back to me.

'I thought you would not be able to capture it, the bat's flight is remarkably quick.'

'They are blind, are they not?' inquired Annie.

'They have eyes, but they do not appear to be as necessary to them as to us, for cruel people have bored out their eyes for the sake of experiment, and it does not seem to make any difference to them in their flight. It is related that a gentleman after thus inhumanly treating one of these animals, turned it into a room, which he had previously hung thickly with threads, and he was perfectly astounded at the way in which the little creature flew between them, without once becoming entangled. They seem to have some other sense in a very high degree of per-

fection to supply their imperfect vision. If you throw a small stone in the air, the next time the bat flies past us you will be amused at the result; now, Harry.'

In a moment, to the children's delight, it flew at the stone, and then, apparently disgusted with our trick which it evidently understood, it flew off again in an instant.

'Why did it come after the stone, Aunt?'

'Because the voracious little animal thought it had been a fly, or some other insect; it is quite astonishing the immense number it consumes, as it darts backwards and forwards through the air. Some people are very much afraid of bats, but they are perfectly harmless. I was awakened last summer by hearing one scratching up and down my wall, and then round and round my room, which it had entered by the open window.

'They are pretty little things, something like a mouse with wings; their ears are very long, and of great size, and standing erect, it gives them a peculiar look; the eyes are very small, like a little bright black spot. During the winter they remain in a torpid state, eating nothing, and never stirring from their hiding-place. For many years one of them found shelter during the cold months upon the wooden ledge over my hall-door, where the swallows used to build; but last winter was most unusually severe, and the poor little bat fell down, frozen to death.

'There are many other animals, and also numerous insects, which remain in a torpid state all through the cold season; it is called hibernation. Sometimes we have a few fine warm days in March, when the bats will venture out, but their pleasure is of very short duration, and they are soon compelled to return to their former quarters.

'Their cry is very sharp and peculiar, and cannot be heard, excepting by those whose hearing powers are very acute. In some places abroad there is a very destructive species called the Vampire Bat, which kills many animals, by sucking their blood; and it is even said that it destroys men in the same way; it alights near the feet, when the victims are asleep, and begins fanning with its prodigious wings, which has a soothing effect; it then bites a *very* small piece of flesh from the great toe, and commences its deadly work.'

'I see such a splendid large moth,' exclaimed Harry; 'I am certain that I can catch him, although I was not lucky in my chase after the bat.'

To my little nephew's great joy, his endeavours were crowned with success; his prize turned out to be a fine specimen of the Privet-hawk moth. We placed it carefully in our box: upon examining the net, Harry had also caught two earwigs flying; while we were looking at them they opened their wings and flew away.

'Now, children, if you beat about the bushes,

you will probably start out a number of moths; but it is scarcely worth while catching any more, as you are not old enough to make a collection like mine at present; it requires great care and attention; but at some future time, I hope to help you to make one. I think we must go indoors now, and then I will show you a sketch of the caterpillar of the privet-hawk moth: it is full size, and is a very fine one. (Fig. 3.) These are almost the largest caterpillars to be found in England; they are light green in colour, with seven streaks of pink and white down each side, and a hooded head, which they draw in when frightened, and altogether they have a very striking appearance. They feed greedily on lilac bushes, and in the autumn bury themselves in the ground.'

'*Bury in the ground,*' said Annie.

'Yes, my dear; a great many caterpillars pursue this plan; we will take our trowel and find some *chrysalides* (as they are called), another day. Many keep in this state all the winter, some for two years before they change into a butterfly or moth: *all* caterpillars do not bury in the earth: some spin delicate webs, in which they securely enclose themselves; others hang suspended by a fine but strong thread from trees or houses: then there is another kind called leaf-rollers, because they wind themselves up in leaves before they change into chrysalides. (Fig. 4.) But now I must leave you in the

dining-room for a few minutes, while I take off my jacket and hat.'

When I returned, my little nephew, in a surprised tone of voice, asked me whether I kept a *watch* in my cabinet drawer; 'Annie and I have been wondering why we never noticed its ticking before.'

'The noise you hear is caused by a little beetle, which is called the death-watch. (Fig. 5.) I have often heard its peculiar tick, tick, for hours together, when sitting quietly alone in this room; it is easily alarmed, as I will prove to you by knocking upon the place where you hear its quick tapping.'

The noise instantly ceased, and it was some time before it commenced again.

'If you look closely at the cabinet,' I continued, 'you will observe that it is thickly perforated in parts by the insects in a caterpillar state: nothing seems to come amiss to them; they bore through planks, beams, and every article of furniture which comes in their way, and even books are not safe from their ravages. The holes are cut as sharply as if they were drilled with a very fine brad. I am afraid they have begun their destructive work in my cabinet drawers, amongst my collection of insects. Some people are foolishly alarmed at the ticking of the death-watch, and think it is a sure forerunner of evil; it is simply the way in which these insects

call to each other, by sharp and quick raps upon the wood.

'I will tell you another tale about your uncle, which happened to him at Cambridge. He constantly heard this curious little beetle, for two or three months, whenever he was sitting quietly reading in his rooms; sometimes in the daytime, but more especially in the evening. He thought he would try an experiment with his watch: taking it out, he laid it down on the wood, near the spot where he heard the insect tapping; immediately it began to tick in reply, in a very furious manner, and appeared to become more and more enraged: this continued for some time, but at length it gave up replying, feeling evidently outdone. He always found that at any time he could rouse it up in this way, even when it was perfectly quiet; but it is getting late, and quite time for you both to be off to bed. As to-morrow will be Sunday, we must leave our little Natural History till the following day.'

CHAPTER III.

On Monday morning we started for the Park, and as is always the case with those who study Nature in all her variety, we were not long in finding plenty to amuse and interest us. My little nephew and niece had set their hearts upon going to a very large piece of water, at the further end of the Park, as I had previously told them, that the *water* was probably as productive of wonders as the *land*. We first walked down to a large ditch, which was near the lake, Harry carrying the glass bottle, and the dredging-net.

When we arrived at the 'scene of action,' as Harry laughingly called the ditch, I gave him leave to take the first dip with the net: he drew it up from the water with an anxious expression on his face, and carefully landed it on the grass: upon examination of its contents, we found what the children thought was a small fish. I told them that it was a *young* tadpole, just out of the egg, and that in a short time in which it would undergo two more

changes (fig. 6), it would become a frog. This statement seemed to surprise them very much, as they could trace no resemblance to that animal in the odd, fishy-looking little tadpole. We filled the bottle with water, and then put our treasure safely in it.

'Perhaps we may be able to catch another of his companions in a more fully developed stage,' I continued: 'try again, Harry.'

Now he brought up a large water-snail, which we placed in the bottle with our first capture; to our surprise, the snail at once attacked the poor little tadpole, and immediately killed it!

'We will throw away the cruel, ugly snail,' cried Annie, 'and try to get some more of these nice little tadpoles. May I have the net this time, Auntie?'

'Yes, my dear; and I hope you may succeed in finding another, to supply the place of this one that the snail killed.'

To the delight of my little niece she caught two more tadpoles, one like the first, and the other in the last state before it comes out as a perfect frog. Annie was charmed with its 'dear little feet,' and thought herself a very good *fisher-woman.* She placed them both in our glass bottle, and they swam about in great style.

At our next attempt Annie brought out several beetles, one a large specimen of the water-beetle (fig. 7), two water-boatmen, and a water-scorpion:

the latter I advised the children not to touch, as, if carelessly handled, it will inflict a sharp wound with its strong, well-armed beak. With due precaution we managed, however, to place it safely with the tadpoles, and then we put in the other beetles. The water-boatmen caused us much amusement, with their swift movements round and round, swimming upon their *backs*, and using their long hind-legs as oars. They were certainly most restless little creatures.

'Oh, Auntie, what funny little wriggling things I can see in the water!' cried Harry; 'what are they?' (Fig. 8.)

'They will turn into gnats in a few days. I have a small bottle in my basket, which we will fasten to a stick and catch some; then you will be able to watch their curious transformation.

'Draw the bottle gently towards them, Harry; now push it quickly under the water: there, you see, several are sucked in. We will keep them in this bottle, and tie a piece of muslin over the wide mouth, which will admit the air, and also prevent the young gnats from flying away. When we untie it to-morrow morning, you will probably find some of them changed into the perfect insect. It is interesting to watch them as they emerge from their prison-house. (Fig. 9.) They take the greatest care to avoid wetting their wings, and float upon their old, cast-off skins.'

'I have often seen these little black things in the water-tank at home,' said Annie, 'and have amused myself with watching their ceaseless movements—now on the top of the water, and the next moment at the bottom; but I had no idea that they changed into gnats.'

'I will give you a short account, my dears, of the clever way in which the mother-gnat deposits her eggs. She alights on the surface of the water, and lays them in the shape of a little *life-boat* (fig. 10), which is so light, and yet repellent to the water that it is quite impossible to upset or to sink it. In the form of this ingenious and safe conveyance the eggs float about for two or three days, and, when hatched, they swim and dart through and through the water in the form of these wriggling little insects.

'Perhaps you will be surprised when I tell you that the greater part of the existence of the elegant and beautiful dragon-fly is spent in the muddy bottom of a pool or ditch.'

'You have told us so many startling things that we can scarcely feel surprised at anything *now*,' said Harry, in a pompous manner.

'My dear boy,' I answered, 'you have had at present a *very small* peep into the mysteries of animal life; and there is much, *very much*, far above your comprehension, or that of the greatest naturalist.

'But to return to the dragon-fly, and its peculiar habits in the first stages of its existence. The female lays her eggs in the water; they quickly sink to the bottom, where they are hatched into grubs with six sprawling legs (fig. 11): with these they crawl about the mud, and glide by a singular process through the water; they are very voracious, devouring insects, tadpoles, and even small newts and fishes. From this state they pass through several changes, at each one casting their skins, until at length they come forth, at the end of two or three years, as perfect dragon-flies. When ready for the final change, the grub attaches itself to reeds or rushes, and by their aid creeps to the surface of the water, where it bursts out from its obscurity into the graceful, fine insect, so much admired.

'They then still continue their ferocious and hungry habits, pursuing gnats, flies, and butterflies; they are even said to pounce upon tiny fishes, when swimming heedlessly upon the surface of the water. Sometimes dragon-flies migrate in large swarms from place to place, and it is believed that they cross the sea. In Germany a cloud of them was seen so dense as almost to hide the light of the sun. The largest of our English species measure about four inches from tip to tip.'

'What are those pretty insects which are now flying past?' cried Annie: 'how clear their wings look! Can you tell me what they are called, Aunt?'

'They are May-flies, my dear (fig. 12): their life is very short, for they only live *one* day; but in their *earlier* state, as grubs, they exist for a much longer period. They are then found living in the water, under stones, or hiding in little holes, which they make in the bank.'

'Now, Aunt, may I dredge again?' inquired Harry; 'I am anxious to see what else we can find in this ditch.'

'What *horrible*-looking things!' exclaimed Annie, shuddering, as Harry placed the net on the grass; even he seemed alarmed at his new catch, which indeed did not look very tempting, for he had fished up two newts. I told him that they were harmless, but he kept at a respectful distance from them. As I did not wish the children to be frightened, I told them that I would place the net on the ground again, and immediately the offenders ran back into the water, one of them, according to its frequent habit when alarmed, leaving its tail behind!

'Although you did not wish to look at the newts, perhaps you may like to know something about them, my dears. Many grown-up people are afraid of them, but their fears are groundless. They are amusing little creatures, and can be kept in a tank, if care be taken to feed them well; but I think neither you nor Annie would care for such pets! They feed upon all sorts of insects, tadpoles, and

little red worms, the latter appear to be their favourite food. If you had examined the newts, you would have seen that they are very beautiful. The male has a green back, and is of a bright orange colour underneath.

'The female takes the greatest care of her eggs: by the aid of her fore-paws, she twists or ties up each one separately in the leaves of water-plants, which she glues together: it is generally thought that she adopts this plan to guard the eggs from the ravages of water animals. The young newt is very similar to a tadpole. They undergo several changes before they reach the perfect and last state.'

'Look, Auntie, at those queer little sticks at the bottom of the water; they appear to be walking along,' cried Annie. (Fig. 13.)

'I suppose they are small *walking-sticks*,' replied Harry, laughing at his own cleverness, and little thinking that he had given a correct answer.

'Annie is quite right,' I said; 'the sticks *are truly moving* and bobbing about, for they are inhabited by an insect, which in its perfect state is called the Caddis, or Stone-fly. (Fig. 14.) There are several varieties of these flies, and their mode of life is indeed peculiar, but I think we must not stay out much longer; we will just go to the stream, and see if we can find any fresh-water shrimps: they are generally to be found in abundance in any running water. They are very voracious, and without their

aid, our streams would soon become putrid.' To the children's disappointment, there were no shrimps to be seen, and they followed me slowly homewards.

I endeavoured to make them cheerful again by telling them about two curious and ingenious beetles, called the Ant-lion and the Tiger-beetle. 'The former of these very much resembles the Dragon-fly in its fierceness of disposition, but their habits in the first stages of their existence are very dissimilar. The larva, or grub, lives chiefly upon *ants*, which it catches by a peculiar and clever method. It manages to form a trap, by walking backwards, round and round, until a deep hole is made in the sand, two inches in width, and nine in depth: in this tunnel the artful creature hides, and remains quiet in its concealment, waiting for any unfortunate insect that may pass too near the edge of this cleverly constructed pitfall. All that can be seen of the ant-lion, is two good-sized horns, and twelve eyes projecting from the loose sand. Its long, sharp fangs are always open, and ready to receive its prey, which consists of ants, flies, wood-lice, and spiders.

'We will suppose a fly approaching to the edge of the trap; it sees its danger, and endeavours to draw back, but it is now too late, for the treacherous sand gives way beneath its feet, and it is thrown down the aperture; but it is not lost yet, for it has only fallen half way, and is now striving hard to get

up again; the sand however is loose, and it falls down further than it was before; it again mounts the side, but the ant-lion begins to think the time for action has arrived, therefore loading his head with sand, he throws a violent shower at the doomed fly, knocking it down again. Once more it tries to re-ascend, but it is again repulsed by the shower of sand, and this time it falls quite to the bottom of the hole, between the horns of its conqueror: he quickly seizes the poor fly with these terrible appendages, and pierces it through and through.'

'In a short time nothing is left but the skin, and the ant-lion then places the empty carcase on his head and throws it out of his underground home. Again resuming his former position, he lies in wait for the next prey. Now shall I tell you about the Tiger-beetle, my dears?'

'If you please,' answered Harry. 'I suppose it is not such a clever insect as the Ant-lion,—is it?'

'When I have told you about its habits, I think you will agree with me, that this beetle is quite as ingenious as the other. They are found in the heat of summer upon heaths, and other dry localities. They are called *Tiger*-beetles, on account of the great resemblance they bear in their dispositions to the bloodthirsty and ferocious animal from whom they are named. They are equally remarkable for their beautiful colours, and their activity, but principally for their *rapacious* habits. They fly off the

moment they are alarmed, but alight again at a short distance.

'The grubs exhibit marvellous strength and skill in the construction of their dens, which are, many of them, a foot in depth. Their method of burrowing under ground is carried on by means of their powerful jaws, with which they loosen the earth, and carry it upon their broad heads; they have hooks upon their backs, which assist them in climbing. When on the watch for prey, they stretch themselves across the entrance of the hole, so as to form a *living* bridge, and when any unwary insect steps upon it, the bridge suddenly gives way, and the unfortunate creature falls to the bottom, where it is quickly devoured.

'There is a class of beetles, which perform a very useful work; they are called the Sexton, or *burying*-beetles, from the instinct which leads them to bury underground the carcases of animals, birds, or any other dead matter which they find, thus preventing our atmosphere from becoming tainted and unhealthy. Experiments have been tried, to test their burying propensities, by placing dead animals and other creatures on the ground; they generally disappeared in two or three days, and sometimes sooner. Upon digging on the spot where the body of a mole had been laid, it was found buried three inches in depth, and underneath it were four of these hard-working little Sextons: to make sure that it was done by

them, they were put into a large glass-vessel, half filled with earth: two dead frogs were then introduced; the beetles immediately commenced their labours, and in about twelve hours, they had completely buried them.

'Small animals and birds were also placed in the vessel at different times, until at length, in fifty days, those four active beetles had buried no less than twelve bodies.

'There is yet one more beetle, which I feel sure you will both like to hear about; it is called the Tortoise-beetle; and you will be amused when I tell you, that it is so afraid of spoiling its *complexion* that it carries stretched over its head a *small parasol;* the insect makes it from the leaves of the plants on which it has been feeding. But I think it is quite time to bid good-bye to the beetle tribes, and dinner is ready.'

* * * * *

In the evening, when I was reading to the young folks, they were much startled, for without any warning our candle was suddenly put out, followed by a whirring noise, as of something fluttering round and round upon the table. Annie began to scream, and Harry also was much frightened.

'Do not be alarmed,' I said, striking a match; and upon lighting the candle, we saw a large moth, so much burnt that it was unable to fly away.

'We will kill it and put it out of its sufferings,'

said Annie, who could never bear to see anything in pain.

'Yes, we will do so,' I replied, 'for it would only be cruel to keep it in this terribly burnt state.'

'What a very large moth it is,' observed Harry. 'But it looks rather horrible,' he continued, 'with these odd marks upon its head. They remind me of the picture of the *skulls* in Giant Despair's Castle, which you were reading about to us the other day.'

'You are quite right; this fine insect is called the *Death's-Head* moth, and it is always regarded by the ignorant and superstitious as a certain token of evil. I have often *read* that this moth occasionally flies into houses in the twilight, but I have never known one to do so before. Sometimes it makes its way into a beehive, for the sake of the honey; and it is very curious that the bees never interfere with the intruder, although they could easily sting it to death.'

CHAPTER IV.

'I THINK we can probably find another day's amusement by the lake, my dears,' I said to my little charges, as we were starting for our tour again the next morning. 'We will leave the dredging-net at home to-day, for we examined the contents of the water carefully yesterday.'

'I should like to take it, please, Aunt,' said Harry, 'for perhaps we shall see some shrimps this morning.'

As soon as we arrived at the lake, a most beautiful kingfisher flew from a hole in the bank.

'Oh! Auntie, we will try to get the nest,' eagerly exclaimed Harry.

'It would be useless labour, my dear boy, for we should quite spoil it, and break all the eggs before we could get it from the hole. As far as we are aware, no one has ever yet been able to procure a nest in a perfect state. About three years ago, a reward of 100*l.* was offered to any person who could produce a kingfisher's nest and eggs, perfect and entire. They generally make them in rat-holes,

like this one that you now see. If you look closely into the entrance, you will observe a number of fish-bones; this fact has given rise to the erroneous opinion that *rats eat fish*, whereas it is the favourite food of the kingfisher, as you now see for yourselves.

'It is a great pleasure to this bird to sit perched on the bough of a tree overhanging the water, watching for food: if unsuccessful, he flies along the stream just above the surface, sometimes hovering for an instant, with quickly-fluttering wings, over the place where he sees his prey; the next instant darting, with a swift sweep into the water, he seizes upon a fish, and bringing it up in triumph in his bill, he instantly swallows it. The kingfisher is considered the most beautiful of our three hundred and twenty-three species of so-called British birds.

'There is a class called the Dippers, or the water-ousel, which, like the kingfisher, lives upon water insects and the fry of fish. These birds have a very peculiar method of walking *under the water*, for which purpose they are furnished with strong, sharp-nailed feet, which enables them to cling firmly to the stones and sand beneath, and to resist the force of the water against them. They have been seen walking at the bottom of rivers, with their feathers quite dry, for they are of a nature to resist the entrance of the water. They will even scratch up the stones, to get at the beetles and other insects con-

cealed beneath. When I have been on the sea, I have often seen the dippers riding on the waves, and then suddenly they would dive down, and after a short time come up again, at some distance from the place at which they disappeared. Then, in a little while, they would dive again for fresh prey.'

'Look at that large old rat,' cried Harry. 'How I wish our dog Prince was here! He would soon catch it, and eat it too. He is such a large dog that he can easily swallow a rat whole!'

'It is certainly an odd taste, but I believe some dogs will eat the water-*rat*, as it is commonly called, although the term is not correct, for the real name is water-*vole*. These animals are more like the beaver than the rat tribe.

'The water-vole lives on vegetables, grasses, and reeds, but the common brown rat—for which he is often mistaken—is a flesh-eater, and a most rapacious little animal; indeed, so repulsive is his nature, that he will eat his friends and relations if they are taken ill and unable to defend themselves; and he has been even known to devour his own children! Their habit, however, of eating everything that they can find which is offensive, makes them of great use in destroying putrid substances that would otherwise breed bad fevers.

'The old-fashioned black rat is of a much more gentle disposition, and altogether different from these cannibalistic brown rats, by whom indeed

they are almost entirely destroyed, and it is now a rare occurrence to see the black rat. Their supplanters are supposed to have been brought into England in the very ship which conveyed King William III. to our shores. They have proved most unwelcome guests in every way, for so bloodthirsty is their nature, that they have even been known to attack men when employed in cleaning and repairing drains and sewers, which are their favourite haunts, and where they generally live in large colonies, for they increase at a prodigious rate.

'Some rats are migratory in their habits, living in barns during the winter, and in the spring departing again for the fields. When autumn comes, they once more return to their former haunts, bringing back their large families with them. Then the farmer—and indeed every one who has any stacks on his premises—is obliged to send for a rat-catcher, with his dogs and ferrets, to catch the bold intruders.

'I will now tell you an anecdote of a deadly contest between a rat and a large cat, which belonged to a party of beachmen in Yarmouth, called the Holkham Company. This cat was a great favourite with the sailors, and would follow them about everywhere, even up the string of ladders which lead to the top of the look-out, between sixty and seventy feet in height. It would answer

to the men's whistle like a dog, and was a remarkably fine black cat.

'One morning the sailors found it in the loft at the foot of the look-out, lying nearly dead on the floor, and a large rat, which it had killed, close by its side; but the poor cat had evidently had a severe fight with its enemy, for its face was terribly mutilated, the flesh being completely torn away from one side. Whether this was done entirely by the *one* rat lying dead on the floor, or by several, is of course uncertain; but as there were no traces of any more rats to be discovered, it seems probable that the mischief was caused by this one, which the cat had at length vanquished.

'The kind-hearted sailors tried hard to restore their pet to health and strength again, but without success, for it only lingered a few days, refusing all food, and paying no attention to its sorrowful friends. It passed most of the time in sleeping, and gradually expired. But I think I have told you enough about the rat-tribe.

'You probably remember that I promised to find some chrysalides for you, and that I also told you that the chrysalis is the state into which all caterpillars pass before coming out as moths or butterflies. We will dig at the roots of these trees by the river, for caterpillars always prefer a moist soil for their underground operations. Some species creep under the bark, and there undergo

this remarkable change. You may dig if you like, Harry, but first we will pull up a tuft of grass, for often they do not lie at any depth in the earth.'

After tearing up several sods, we only found some small chrysalides, and I advised my little nephew to try what he could find with the trowel. Upon digging out a small quantity of mould, he disclosed to our view several more chrysalides, some being large ones.

'May we take these brown grubs home with us, Auntie?' inquired Annie.

'Yes, my dear; I brought a box with me on purpose; we must put some earth at the bottom of it. If you dig under your privet-hedge at home, in the autumn, you will be almost sure to find some *very* fine chrysalides of the Privet-hawk moth. You remember I showed you a drawing of the caterpillar (fig. 1).

'The butterfly and the moth, in common with most insects, are endowed by God with an instinct, which guides them in an unerring manner in the selection of the exact spot to deposit their eggs, where the future caterpillar will find its suitable nourishment, as soon as it is hatched; for instance, the common white butterfly lays her eggs in our cabbages, which you have seen covered with little green caterpillars. The privet-hawk moth selects the privet and the lilac bush; the death's-head moth the potato plant. They never make a

mistake in choosing the proper plant or bush for food for their young caterpillars, which begin to eat voraciously as soon as they are hatched.

'If you were to examine the wing of a butterfly through a microscope, you would find that what people call *dust*—namely, the soft substance which comes off on our fingers if we touch them roughly—consists in reality of a number of beautiful feathers, arranged in the most perfect order. The wings of one species of the pretty little blue butterfly (fig. 15) are covered with scales, called, from their shape, 'battledore' scales; they have a very peculiar and striking appearance, exactly resembling that well-known toy, a battledore.'

'Oh, Aunt,' exclaimed Harry, 'I can hear some one cutting down a tree at the end of the park; what a pity to have your beautiful old trees destroyed!'

'It would, indeed, be a pity, my dear; the noise you hear is not caused by a *woodcutter*, but by a bird called the woodpecker; it makes the tapping with its beak, raising up the bark of a tree to get at the insects concealed beneath; we will walk in the direction of the tapping noise, that you may see the bird.'

We had not proceeded far when the sound ceased, and the woodpecker flew heavily over our heads, uttering a sharp cry.

'Look at its long sharp beak,' I said; 'it is

very strong, and shaped like a chisel; thus it is adapted for piercing the bark of trees; its tongue can be darted out to a great length—three or four inches from the bill—and it is armed at the tip with horny stiff barbs.

'If you examine this tree you will see that it is riddled with holes, which are made by the caterpillar or grub of the stag-beetle; they live in and upon the wood for several years before they change into the perfect insect; sometimes whole forests have been destroyed by their ravages.'

The stag-beetle has a very formidable look, with its stupendous jaws and horned appendages, which somewhat resemble the antlers of a stag, and thus it was named the stag-beetle. It is the largest of our English species, frequently measuring nearly three inches, including the horns. But although it has such a terrible appearance, yet it is perfectly harmless; its food merely consisting of the sap of trees, and of the juices of plants. Its monstrous jaws are certainly capable of inflicting hard pinches, but they are not used for the purposes of stabbing, or of killing, as we might imagine, from their furious look. The female beetle does not possess these large jaws. But we will leave this tree, and examine that fine oak, where we shall probably find some gall-nuts, or oak-apples, as they are commonly called.'

'Are these what you mean, Aunt?' cried Annie,

pointing to some little brown things, which looked like balls.

'Yes, my dear, and you will be astonished when I tell you that by their aid we write our letters.'

'I do not understand what you mean,' replied Harry; 'I have never used any oak-apples for writing.'

'Well, I see I must tell you my meaning. The gall-nut of the oak is used in making ink, and it is also of great service to the dyer, for it yields a deep black liquid; we will gather some of them, that you may see what is inside.'

I opened one, and we perceived a small grub coiled up in the middle of the nut.

'This ball,' I continued, pointing to another, with a hole in it, 'is empty; the little insect has finished its prison life, and made its escape as a gall-fly; she will now, in her turn, bore a hole in the leaves, or young shoots of a tree, in which she will lay her egg or eggs, but usually only one is deposited in each hole. The bored part will then swell into a ball; sometimes the eggs are laid in the bark, or in the roots of trees.

Most galls have only one grub inside like these, but *occasionally* they are inhabited by a very large number of them. A gall was once found at the foot of an oak; it measured five inches in length, and one and a half in breadth; when opened more than a thousand insects were discovered. They

generally remain in the caterpillar state for about six months, feeding upon the interior of their strange home. The gall-fly prefers to lay her eggs in the oak or in the willow-tree. The bark of the oak is used for many purposes; more especially for tanning.'

'Look at these pretty little lady-birds, Auntie,' said Annie, 'will you please tell us about them, according to your promise?' (fig. 16).

'Yes, my dear, I am glad to see that you take such an interest in our Home-tour. First, I must tell you that all insects pass through four stages, namely, the egg, the caterpillar, or larva, the chrysalis, or pupa, and finally the perfect insect.

'The lady-bird lays her eggs in little patches on the leaves of plants. They are hatched into caterpillars with small heads, and thick, yet tapering bodies (fig. 16A). These are furnished with six short legs, with which they creep actively about the leaves. They are generally of a dark bluish-grey colour, having black spots, with which are mixed a few large ones of an orange colour.

'They feed greedily upon small insects, which are called Aphides, or plant-lice; devouring them at a surprising rate. When the grubs attain their full size, they glue the hind part of their body to a leaf, and for a day or two remain in this state, until the skin splits down the back, and the pupa becomes visible (fig. 16B). This is of a white colour at first, but soons turns black, spotted with red and yellow.

For a week they keep perfectly quiet in this form, apparently lifeless, but all this time an important work is going on in the forming and hardening of the different organs which belong to the perfect insect. The chrysalis case then bursts open, and the lady-bird crawls out with its wing-cases small, and crumpled in appearance, but they quickly increase in size, and become smooth and well-shaped. For a few hours the lady-bird is of a pale yellow colour, without any sign of the spots that afterwards turn so rich and beautiful. The skin soon acquires firmness, and the insect strength; it then takes wing to feed again upon the plant-lice, which are so injurious to our hot-house flowers, and our gardens; in the hop plantations they also cause great destruction, and sometimes quite spoil our orchards, covering the trees in countless multitudes. The rate at which the plant-lice increase is truly astonishing.

'It has been calculated that if an aphis were to live to see his offspring to the fifth generation, he would find himself the great-great-grandfather of nine billions, nine hundred and four millions of plant-lice, or to make it appear plainer, of a family about fifty times more numerous than all the people living upon the whole earth! You can imagine what would be the result of their ravages, if left to themselves, but God in His providence, has ordered for our good that these destructive aphides should have innumerable foes, and by their relentless exer-

tions our land is delivered from what would otherwise prove a terrible plague. Foremost amongst their destroyers is the lady-bird, which you see is not only a graceful and beautiful little insect, but is also of great use to our gardeners, in preserving plants from destruction.

'In the year 1869, the plant-lice visited our land in great multitudes, becoming quite a scourge; our gardens and green-houses swarmed with them, and the hop-grounds suffered considerably; the orchards also were covered with the blight. Many letters appeared in the newspapers on the subject. A gentleman in Woodbridge observed it upon his choicest apple-trees, and it caused him much uneasiness. In a short time he noticed myriads of lady-birds alight in his garden; they immediately set to work on the blight, and after one week only, the trees were perfectly free, and looking as healthy as they did before the disease appeared.

'Large swarms of lady-birds were noticed all over the kingdom, following quickly the blight of plant-lice, which they soon destroyed. They were doubtless sent by our Heavenly Father, who "ordereth all things in heaven, and on earth." The aphides visited some places in such immense flights, that they were reported to darken the air, and they must have caused a dreadful famine, had they not been closely pursued by their relentless enemies, the lady-birds; which appeared in such myriads, as to astonish the

oldest inhabitants of our land, gardens: parks, trees, and shrubs were covered with them.

'On the banks of the river Lea, the pathway was so thickly strewn that it was impossible to walk without crushing many at every step. In some places there were clouds of them to be seen flying through the air, as flakes of snow in a storm, assailing ears, eyes, nose, and mouth. They invaded most of our large towns, and London was visited by them in extraordinary numbers. There is no doubt they performed a beneficial work, as I said before, in clearing away the plant-lice.

'A gentleman in Brighton observed that his green-house was covered with the blight, and as he wished to ascertain whether the lady-bird actually feeds upon them, he caught half-a-dozen, and placed them with his plants. He then watched their operations through a magnifying glass, and saw one lady-bird eat three of the little green flies in less than a minute, and another quickly cleared a sprig of fuschia, covered with the aphides. An experiment was also tried with a green gourd which was similarly infested; in a few days it was quite cleared, so actively did the little lady-birds set to work picking up and devouring the destructive flies, as a hen picks up crumbs of bread. In some places the lady-bird goes by the name of *bish-a-barna* bee, in others it is called the lady-cow. There is an amusing little verse addressed to this beetle, it runs thus:—

"Bish-a, bish-a barna bee,
Tell me when your wedding be;
If it be to-morrow day
Take your wings and fly away."

'In Norfolk more especially is this curious name given to the lady-bird; every child, rich and poor, learns the verse as soon as it can speak. I have been amused sometimes, when passing a cottage, to hear the words lisped by a little rosy-faced child standing over the pretty insect with an expression of the greatest anxiety on her face; so intent upon the result of the lines she is repeating, that I have stood and watched her unobserved. If the bish-a barna bee does not "take its wings and fly away," the verse is repeated over again, and again, until at length I have been made aware, by the sudden clapping of little hands, and the cry of pleasure and triumph, that the anxiously desired result has been accomplished.'

'Shall we go down to the stream now, and see if we can find any shrimps?' inquired Harry.

'Yes, we will go at once; you have carried the net so patiently that you deserve to catch some as a reward.' My little nephew was off in an instant, and reached the stream before Annie and myself; a few minutes afterwards we heard a scream and a splash, and hurrying on we found poor Harry scrambling out of the water, which fortunately was very shallow. In his excitement and eagerness he

had over-balanced himself: very miserable was the appearance he presented, with dripping clothes, and bare head, for his hat and net were floating on the water. His face wore a very sorrowful expression; I did all I could to comfort him, and after having secured the hat and the net, we hurried home that he might take off his wet clothes at once.

On taking out his handkerchief to wipe his wet face, he discovered to his surprise one of the coveted shrimps which had been the cause of his disaster. He almost forgot his miseries in the triumph of having caught one after all. The wet handkerchief kept it alive till we reached home. I then took charge of the prize, and promised Harry to place it safely in water whilst he ran up-stairs to take off his wet clothes. I filled a tumbler from the large glass bottle that contained the water-boatmen and other beetles, as I thought the shrimp would be more likely to live in water taken from the ditch, which adjoined the stream.

Harry soon returned, and his face beamed with pleasure when he saw the shrimp swimming about in a strong and healthy state. I told the children that the water in the tumbler contained thousands of inhabitants besides their pet. They seemed rather incredulous, and said that they could not see any. I fetched a very powerful microscope, and taking a few drops of water desired my little nephew to look, and to tell us what he could see.

'Oh, Aunt!' he exclaimed eagerly, 'what hundreds of curious-looking things; some are like little worms, and some keep rolling round and round at such a pace! and then there are some more, which are the funniest of all, for they appear to be constantly changing in shape and size; *you* must look at them now, Annie.'

My little niece was as much interested and pleased as her brother, with the strange inhabitants of the water: she said that she could see some with tails, and others shaped like a bag. 'Will you please tell us a little about them, Auntie?' she asked.

'Yes, Annie; the invention of the microscope brought to light a world of minute and wonderful animals, the existence of which was until that time unknown. By the power of this instrument it was discovered that probably every drop of water contained millions of living creatures; some so marvellously small that 500 millions of them might exist in one single drop, an amount perhaps about equal to half the whole number of human beings on the surface of our globe! If a *drop* of water thus swarms with life, what myriads of animalcules must be contained in the vast expanse of the ocean, a million of them would not exceed in bulk one grain of sand.

Those that you see constantly rolling round and round, are called Whirlers; then there is the polype,

or *many feet*, and it is owing to the ceaseless exertions of countless multitudes of this class, that the coral reefs are formed.

'The slender worm-shaped *animalcules* (minute animals) are called microscopic eels, and these are also to be found in great numbers in sour paste or in stale vinegar; many others are called by very learned names, quite above your comprehension. I will only tell you about one more, the wheel-animalcules, which seem to have a most ingenious method of pushing themselves along, by means of two wheels, one on each side of the front part of the body; most of the microscopic creatures are furnished with a perfect mouth, tail, stomach, nerves, and other organs.

'The easiest way of obtaining a variety of these smallest specimens of animal life, is to place in a large-mouthed bottle, half filled with water, bits of straw, peppermint, dead leaves, and other vegetable substances. After a few days, if the weather be mild, or the room in which the phial is placed be tolerably warm, a drop taken out and placed under a microscope, will exhibit some of these minute animals. Generally the longer the impure water is kept, the more will it teem with inhabitants. Leaden gutters filled with water are the most likely places in which to meet with the wheel-animalcules, especially in warm weather.

'Many experiments have been tried with this

class, and it is found that their hold upon life is so strong and lasting, that they may be perfectly dried, and apparently destroyed — kept in this state for years, and yet they can even then be brought back into their former activity. It is also almost impossible to destroy life in the butterflies' eggs, for even if boiled, or exposed to the most intense cold, they will, when placed in the sun, arrive at maturity.

'The smallest of all the microscopic creatures are called the Monads, and it has been ascertained, by very careful study of their habits, that they have at least four distinct stomachs, and each variety of animalcules has its own peculiar food. The more closely we examine nature, the more we shall feel constrained to exclaim with the Psalmist "O Lord, how manifold are thy works; in wisdom hast thou made them all: the earth is full of thy riches!'"

CHAPTER V.

As we were preparing to start on the Wednesday morning, we heard a most extraordinary noise, followed by a scream from one of the servants. On opening the kitchen-door, a very curious sight met our gaze. In the midst of a pan of cockles was a poor little mouse, struggling violently, firmly held by the foot in the grip of one of these little shell-fish, which my servants had bought the day before. The frightened little creature was uttering most piteous cries, and all its efforts to extricate itself were useless. It was one of the most remarkable occurrences I have ever witnessed, and it caused the children much amusement, although they felt very sorry for the unfortunate mouse.

I told them that I had heard of a somewhat similar case, which happened to a snipe, that was found dead, with its bill tightly held in the grip of an oyster. It was doubtless entrapped in this way when seeking for food in the soft sand by the sea-shore, for the snipe has a very peculiar method of

obtaining its prey; penetrating deeply into moist places with its long, slender bill, which is adapted for this purpose.

'They are very shy birds, but, by means of a good telescope, they have been observed, feeding on the edge of a lake, pushing their bills into the soft mud quite up to their eyes, then drawing them back again with great swiftness. It is well known, that if undisturbed these birds will remain on the same spot for a great length of time. They are famed for their great attachment to particular places; and even if disturbed, in some cases they will constantly return again. It is a very difficult bird to shoot, as its flight is so swift. There is a good story told of a gentleman, who was a very bad shot, but at length he managed to hit and kill a snipe; he was then heard deeply lamenting the loss of the bird, which, as he always felt sure of finding it in the same place, had given him constant amusement during the whole winter.

'Their nests are generally betrayed by the male bird, for he has a peculiar plan of fluttering high in the air, close by his home, all the while uttering a curious note like the furious buzzing of a large bee.

'The woodcock is as noted for its partiality to particular spots as the snipe. A gamekeeper caught a fine specimen in a rabbit-net; he put a brass ring on its leg, and turned it loose again. On finding itself at liberty, it rose to a great height, and

flew towards the sea, which was distant about twenty miles. This was in February. In the following December the same bird was shot in the same wood where it had been previously captured. These two stories are related by Bishop Stanley.

'But now, my dear children, as we walk along, I will tell you a little about some of the Mouse tribes.

'I will begin with the harvest-mouse, which is the smallest of our British *quadrupeds*, or four-footed animals — two mice of this class scarcely weighing so much as one halfpenny. These little creatures construct very ingenious nests, which they usually fasten to strong and coarse stems of grass. They are sometimes found by mowers and hay-makers. The Rev. J. G. Wood describes one which was brought to him as being of the size of a cricket-ball, and almost as round. It was made of dried grass, woven together very cleverly. It was perfectly hollow, and there was no sign of an entrance. Its substance was so thin as to be almost translucent. How the mice managed to get in and out was a mystery, also how such transparent matter was made to retain its well-rounded form.

'Field-mice are very provident in their habits. In the autumn they lay by a large stock of acorns, burying them in small holes which they scratch out in the ground. They are very destructive little animals; for, not satisfied with eating corn, they

also nibble young shoots of different plants, and even strip the bark from young trees and shrubs. Fortunately, they have many enemies, more especially owls and hawks; the weasel also is their deadly foe.

'Some years ago it was found that great damage had been caused in Dean Forest, and also in the New Forest, by these injurious little mice. Large numbers of holly plants were completely spoilt, for they had eaten the bark to a distance of some inches from the ground; a great many oaks and chestnuts were also discovered dead, and when pulled up it was seen that their roots had been gnawed through at a depth of about two inches in the earth. Traps and snares were set in the woods, and more than forty thousand mice were caught in two or three months.

'They may be easily tamed if kept in a cage, and will take food from their owner's hands. One cold winter, about twelve years ago, a little mouse came daily under my window to eat the crumbs which I put out for the birds.'

As I finished speaking, we heard a rustling noise in the air, and a large swarm of bees flew past, just over our heads, straight in the direction of my house, and settled on one of the chimneys.

'Oh, Aunt, please tell us about bees,' cried Annie.

'Certainly I will,' I replied; 'perhaps you know that each swarm is led by a queen, her faithful and

attached subjects following her closely wherever she goes.'

'What a fuss and noise they are making,' remarked Harry; 'how strange that they should choose the chimney for their home; I am afraid they will be burnt.'

'The bees are too intelligent and far-sighted to run such a risk; for many years past they have swarmed in that chimney, where there has never been a fire. Last year they tried the porch, between the leads, but, fortunately, they did not seem to be so comfortable there, for after a few hours all flew away again. You will be astonished when I tell you that the queen-bee is said to lay from fifty thousand to a hundred thousand eggs in a single season; those that are intended for queens like herself, she deposits in royal cells, which are differently constructed from the others. The royal infants are also fed with peculiar food, and brought up altogether upon a plan distinct from that used in the case of ordinary bees.

'All her vast family, when hatched, cannot possibly live in one hive, or—when in their wild state—in the hollow of a tree; they therefore separate into companies, each swarm being headed by its queen.

'Soon after the grubs change into the chrysalis state, the old queen becomes much agitated, as if she knew that rivals would soon appear, and that she must therefore probably quit her home; her faithful and tried subjects crowd around her, and closely follow

her as she makes her escape. All the youthful swarms are afterwards led out, each by their own chosen sovereign. Bees are noted for their great industry and foresight in laying up a large store of honey for the winter.

'Their cells are constructed upon such a marvellously clever plan that our most learned and painstaking mathematicians have never yet been able to accomplish any work in so perfect and highly finished a manner. These little chambers are formed of wax, a substance which was long thought to be taken from flowers, but it is now fully proved to be extracted from their own bodies.

'In a good hive there are from fifteen to twenty thousand labourers, and it is very interesting to watch them commencing their work; they cluster together, something in the shape of a circle, two bees taking hold of the top of the hive, at a certain distance from each other; two more clinging to their legs, and again another couple to *theirs;* and so on till long rows are formed, like strings of beads; many such strings compose a cluster. They remain in this form almost motionless for twenty-four hours, during which time the wax is preparing ready for use, and may be plainly seen through the scales of their bodies, which then appear to be bordered with white.

'At length a bee separates from his companions, and begins to make the foundation of a comb, which

is a flat piece of wax, composed of a large number of cells joined together in rows, ready to receive the eggs, or for honey. The bee works the wax about with its tongue, holding it firmly in a pair of pincers, with which its legs are furnished.

'When this foundation is laid, other bees follow his example, each adding their little store of wax, until a large lump is formed; the cells are then made by a different set of workers, and a third party complete and polish the whole, by drawing their feet and bodies over it again and again, until at last it becomes quite smooth. The queen superintends all these operations, and by her presence gives life and energy to the whole community, but she takes no part in the work herself.

'While some of the industrious labourers are thus busily occupied, others are employed in getting food for them, that they may not be obliged to leave off work, and thus lose time; they bend down their trunks before the food-bearers, receiving the honey into them, and immediately the workers proceed again with their task.

'When all is finished the queen lays her eggs, depositing them one by one in each cell; after a few days they hatch into little grubs, at first rolled up at the further end of their cells, in the shape of a ring. As soon as they require food, their wants are carefully supplied by the nursing bees, from bee-bread, a store of which has been previously prepared

from the flowers. With what remarkable foresight God has in His wisdom endowed this class of insects!

'In the space of about ten days the grub is full-grown, and its nurses, knowing that now it will require no more food, seal it up in the cell with wax. The grub then spins a web for itself, like many caterpillars, and changes into the chrysalis state, in which it remains for about ten days more; at the end of that time it breaks forth, assisted by its nurse, as a perfect bee, and the queen at once deposits a fresh egg in the cell, from which her offspring came out.

'Bees display great attachment to each other; they have been observed in a great state of grief and consternation when one of their comrades dies.

'I have read that a gentleman in Glasgow, whilst walking with a friend in his garden, saw two bees issue from a hive, bearing between them the body of a dead companion. They flew with it about ten yards, and then carefully and tenderly placed their burden in a hole in the ground, afterwards stopping up the entrance with two little stones; their sad task being now ended, they paused for a minute and then flew away.

'I think I have now told you as much as you can understand about the domestic bee; there are several other species, different both in their appearance and habits. I will give you a short account of the *Leaf-cutter* bee, as it is called, from the

peculiar method it has of cutting out with its teeth small pieces from the petals of flowers. It is not a very handsome insect, the colour being yellow and brown, but if you could see its home, you would be struck with the order and highly-finished work displayed in the interior.

'After cutting out a small oval piece from the flower of the red poppy, which is its favourite plant, the bee folds up the treasure with its claws, and at once bears it away to its abode, in a hole about three inches deep in the ground. With this fragment of crimson poppy the insect begins to line the chamber; it requires about twenty such pieces to cover it all, and when completed the work is as neat and well arranged as tapestry. But the bee cannot yet afford to be idle: she now collects the dust from different flowers in her feet, and mixing some honey with it she makes a little heap, and then lays a tiny egg close beside her store of food; thus you see as soon as the grub is hatched it is well supplied with a stock of provision. But even now the bee's work is not over, for if the entrance to the hole were left open, an enemy would be sure to get in and eat the honey, or destroy the egg; the thoughtful mother therefore stops up the opening with earth, and thus her offspring will be safe in its little prison.

'Then there is the *mason* or *carpenter* bee, which chisels out a hole in decayed wood to the depth of twelve or fourteen inches, making it

as smooth as if she had used carpenter's tools. She then lays her eggs, first making a cell for each, and also placing food by the side, ready for them when hatched. After some weeks of hard labour her work is finished, and she also, like the leaf-cutter bee, fills up the entrance to her nest, to keep out all intruders. Bees have been known to pick up small stones for ballast to enable them to fly in high winds; sometimes you may see them on flowers quite laden with honey. There are some species of wild bees that build their nests in sandy banks, and their honey is of a poisonous nature; if only half a thimbleful be eaten, it will cause intense sickness and head-ache, lasting for two or three days. But now I think we have really talked enough about bees and their marvellous instincts, and as our swarm seems to be settled in the chimney we will walk on again.'

As we were passing under an ash-tree a large beetle fell down from the branches, hitting Harry's hat as it descended.

'Do not touch it,' I said; 'it is the musk-beetle, and gives a most unpleasant odour, very strong, and almost unbearable.'

'What a pity!' remarked Annie; 'it is so very handsome that I should have liked to have examined it closely; what a beautiful colour it is! bright green shot with gold. But what is this mound under the oak-tree?'

'It is an ant-hill,' I replied; 'if we turn over some of the stones near it, we shall see numerous members of the family running backwards and forwards in a state of alarm.'

'This mound is inhabited by a large colony of ants, and they live under the most exactly regulated laws and customs; if any of the population break these laws the offenders are punished with the utmost severity. Ants are divided into three classes, males, females, and workers: the males and females are furnished with wings, but the workers have none, and *they* are those tiny, busy little things which we see in our gardens.'

'I did not know that ants had wings,' said Annie.

'Many people are not aware of their flying powers, as the males and females are seldom seen by careless observers; but the industrious little wingless labourers are to be found in myriads all through the summer, hurrying swiftly along our garden walks and elsewhere.'

'Ant-hills are wonderful structures, reared with great skill from very rough materials, being composed of earth, moistened with rain or dew, which they knead together with their teeth, and beat it down with their feet. The ant-city contains endless winding passages, leading to chambers, used for various distinct purposes, some for habitation and some for store-rooms—the lowest down in the

earth are considered the best and safest for their eggs, over which they keep the strictest guard, watching them with untiring care. Their instincts are as remarkable as those of the bee, and they are very similar in many other respects; *they* also possess a single queen, and she lays her eggs in such enormous numbers that it is said as many as twenty thousand are deposited in the course of twenty-four hours. These eggs are hatched into grubs, which are fed by their nurses, in fact the labour of supplying the whole colony with food falls upon them, and they have been seen quite tired out with their great exertions and heavy loads. The favourite food of the ant consists of the aphis fly, and other small insects.

'The ant-grubs change into chrysalides, which are white and strongly resemble grains of wheat, so striking indeed is the resemblance, that for a long time they were actually mistaken for corn, and most people believed that the tiny little ants laid in large stores of this food for the winter. The notion was strengthened by the plan which they pursue of carrying their chrysalides about in their mouths when the nests are disturbed; so precious are these little oval cocoons to them that the carriers are never satisfied until they have taken them all to a place of safety. There is no doubt that many larger species of ants in foreign lands feed upon grain, and also

store it up in their homes; but our English ants are entirely carnivorous, which means flesh-eaters.

'When the weather is wet, the indefatigable nursing ants remove their charges from chamber to chamber, to make sure of their being dry and warm; sometimes they will place the eggs in the sunshine to hatch them. As soon as the first rays begin to shine upon their nest they commence the laborious undertaking. They wake their sleepy comrades in great haste, and then bring out all the young brood, and place them in the sunshine for a quarter of an hour; after this time they must be moved again, for fear of their becoming scorched, and before the sun sets they are all put back in the nest, each one in its proper place. Thus the nurses are obliged to keep a constant watch for all changes of the weather. How wonderful is the instinct displayed by the tiny, feeble ants, and many other insects are equally noted for their astonishing foresight and untiring labours. Everything in nature increases our feelings of reverence and admiration towards our all-wise Creator, who has bestowed upon the smallest of His creatures such gifts of unerring skill and order. Everywhere His hand is visible, but more especially can we trace its workings in all the various and countless tribes of insect and animal life, which meet our gaze at every step we take.

'I could tell you much more about the ants, but I think you are in a hurry to be going on again, and

I do not wish you to grow weary of our Home-tour, or to make a task of that which I intend for your pleasure.'

'Oh! no, Auntie,' said Harry, 'we are not at all tired yet; please to tell us some more about the ingenious ants.'

'Very well, my dears, I will just add, that when the female has chosen a spot suitable for forming her colony, she gnaws off her wings, as there is no longer any need for her to fly about from place to place; her home is now her *all;* her happiness and her interests are centred in that spot alone. But alas! for these poor little *black* ants, they have some most formidable foes in the shape of the *red* ants; and sometimes deadly battles take place, which always end in the defeat of the former, although their antagonists pay dearly for their victory.

'As soon as the red ants have gained the interior of the black ants' home, they search about for the chrysalides, and each carries one away in its mouth to their own habitation. When hatched they make workers of them, and the slaves seem quite contented with their lot.

'Before we walk any further, we will refresh ourselves with some strawberries as we are so close to the beds.' A few minutes afterwards, Annie uttered a scream, at the same time dropping a fine, ripe strawberry.

'How horrid!' she exclaimed, 'my hand touched

a nasty toad. It was so cold,' she continued, shuddering; 'I wish toads did not eat strawberries, they spoil so many of them, always choosing the best.'

'You are greatly mistaken in blaming the poor toads,' I replied; 'they are perfectly harmless, and innocent of the crime of which you, like many other people, falsely accuse them. The mischief is done by slugs, for it is now fully proved that toads are carnivorous. They eat small worms and insects of every description, thus performing a very beneficial work in our gardens, and amongst our *strawberry beds*, where they probably eat the slugs.

'The toad is a hungry creature; a middle-sized one has been known to eat nine wasps at one meal, but the tenth it refused, although in the afternoon of the same day it actually took eight more. Wasps and wild bees may be considered its favourite food; to avoid the danger of being stung, the toad presses them tightly in its jaws for a few seconds, which time is quite sufficient to kill them. But though such voracious eaters, they can endure long fasting. They avoid the light, and very rarely search for food except in the dark, and therefore to see them in full energy of character, it is necessary to find them in their place of concealment. If an insect be then dropped in sight of a toad, it is astonishing to see how quickly it rouses up from its lethargy, its beautiful eyes kindling brightly, and moving with alacrity

towards the prey; indeed, it appears quite animated, and altogether different from what its former sluggish state would have led you to imagine. One evening a toad was seen to seize a field-mouse, which after a severe struggle, he killed and then gradually devoured.

'Every summer a large toad takes up his abode in my cucumber frame, under a flower-pot; if Annie can conquer her feelings of disgust, we will pay him a visit, for he is very tame and sociable. What do you say, my dear?'

'Oh! yes, Aunt, I am not afraid of them now; I thought they had been venomous, and would spit poison at me, but you say they are quite harmless.'

We had now arrived at the toad's home. I lifted up the flower-pot, and thus disclosed him to view. Poor Annie's fears began to revive, and she drew back a little. I took the toad up, to convince her that it was not venomous, and I then gave him some flies and gnats, which he devoured eagerly, darting out his tongue and drawing them into his mouth.

'Lift up that large stone, Harry,' I said; and, to his surprise, he found beneath it another toad.

'They have often been found,' I continued, 'in large blocks of coal and stone. Some people suppose that they get there when in a tadpole state, through some little opening, and then, growing larger, they cannot get out again; but as it is said

that they are not able to exist long without food and air, it is thought that in some way atmospheric air reaches them through the small hole by which they entered. Other people think they may live upon the fluid which is absorbed in their own skin; and this seems the most rational idea, for they have often been found embedded in the centre of trees, where it seems impossible that any food could reach them.

'Some of our most clever men have been turning their attention to this subject lately, and after carefully examining several specimens of toads found buried deep down in clay-pits and coal-mines, they came to the conclusion that these were not formed like the ordinary toad. Their bones were not soft, but more like ivory, and the skin of a darker colour; but the most important difference of all was, that the entombed toads had *no mouths!*

'One of these creatures lived for many months, and was carried about to several places to be lectured upon. When it died, it was sent to Shrewsbury and stuffed.

'From these facts it seems quite evident that toads can, and do live, in a state of suspended animation, without food or air, although many persons still dispute the point, and seem determined to disbelieve everything that they cannot clearly understand.

'When a toad casts, or changes his skin, he

finishes the operation by *devouring* his old cast-off coat; but he certainly does not appear to enjoy the strange meal, as it costs him much exertion to consume it, and he evidently does it as a matter of duty, and not of pleasure.

'A butcher, upon killing a cow, found a living frog in its stomach. When taken out, it was full of spirit, and leaped about, much to the astonishment of all who saw it. The cow had had neither food nor water for more than twelve hours; therefore the frog must have remained for all these hours, or longer, alive in her stomach, supposing that she had swallowed it when drinking her last draught of water.

'Sometimes during heavy storms, innumerable young frogs have fallen, descending in such numbers that the phenomena have been called *frog-showers*. The best way of accounting for this strange occurrence is, by supposing that the violence of the wind has taken up water and frogs from the ponds and rivers, which thus descend again in showers.

'Myriads of young fish have also been noticed in strong gales and rains.

'The frog is very different in its movements from the toad, for it leaps with great agility, taking long springs.

'It is interesting to watch a toad preparing for his winter's sleep. He burrows in the ground back-

wards, with his hind legs, until he has made a hole sufficiently deep to secure him from frosts and snow.

'But now, I think you have learned enough for to-day. We will go in at once, for the heat is very intense. You see we have not been far this morning—only in the garden. Those who are on the look-out for objects of interest never take many steps without being amply rewarded; and I feel sure, as I told you before, that when you return home you will neither find your own garden dull, nor feel at a loss for amusements and interests there.'

CHAPTER VI.

SOON after breakfast the next day, the coachman sent a message to my little nephew and niece, saying that he had found something in the hay-house, which he thought they would like to see.

The children asked me if they might go at once, for they were very fond of my old and faithful servant, who had been in my service for many years.

'Will you come with us, Auntie?' they inquired.

'Yes, my dears; I am also anxious to see what John has found.'

We soon reached his neatly-kept out-houses, of which the old man was very proud. Touching his hat respectfully, he invited us to walk in. He then took down a basket from a peg in the wall, and when we peeped in, we saw amongst the hay at the bottom a snug nest, with four young robins in it. As we were looking at the funny little things, the old birds flew into the hay-house, and they seemed so much distressed at finding their property in our hands, that we hung the basket up again. They

then flew into it at once. I asked John not to disturb them any more, and hurried the children away from the spot.

'The pretty little redbreast frequently selects curious spots for building her nest. I have heard of a pair which brought up their young ones in a steam-boat, and of another pair which built in a saw-pit, that was in constant use. They usually choose a hole in the bank; I have often seen their sharp little black eyes peering at me from their hiding-place as I have been walking along. The eggs are very pretty, white, speckled with light red, but when blown they lose their lovely colour; they are generally five or six in number, but sometimes as many as seven eggs may be found in a nest.'

'Robins are very quarrelsome birds; I have seen in winter as many as *five* under my window at the same time (a very uncommon occurrence), all fighting, and uttering the sharp, peculiar cry, which is the first notice they give of their warlike feelings towards each other. I have never yet seen two robins eating near the same spot, excepting, of course, when they have paired off; they are quite noted for their fighting propensities.

'Directly a robin sees one of his species approaching for the crumbs under my window, he flies straight at it, and is never satisfied until he has succeeded in driving his rival away; then, and only then, does he enjoy his meal.

'Robins are never seen in companies like most other birds. Sparrows, on the contrary, are very sociable, and sometimes many hundreds of them will congregate together, all chattering, as if they were talking over some very important subject.

'But there is something in the robin's favour that I must not omit; he is one of the most cheerful and untiring little songsters. His sweet, plaintive notes may be heard by the hour together; he is particularly fond of perching close by houses, as if he wished to enliven us with his strains; and even in wet weather he is not daunted. He begins his music in the autumn, when other birds have left off singing, and continues his pleasant tunes all through the winter and early spring. I have known them to sit on my window-sill, and warble their cheerful notes.'

'Look at that dear little bird sitting on the top of the pump,' cried Annie; 'what pretty blue and yellow feathers it has, and a black silky head; how tame it seems to be.'

'It is another of my winter pets, and is called the blue titmouse; though the bird is now so tame, yet they are very bold and pugnacious, for if any one happens to look into their nest, they will hiss, and ruffle up their feathers like a turkey-cock. Woe be to the intruder who ventures his finger into the hole where they have built their nest; the furious little bird will inflict such a sharp wound as will not easily be forgotten.

'What a curious noise it makes!' said Harry; 'it squeaks like a wheel that wants greasing.'

'It is famed for its peculiar note, and thus in many places it is called the *saw*-sharpener. They build in almost any hole that they can find; for the last twelve years a pair of these birds have tried every season to make their nest *inside* that pump, but this extraordinary fancy led to great inconvenience, for every time the water was pumped, fragments of moss and stick came up with it, therefore this year I was reluctantly obliged to have a board nailed over the top.

'The nests are very beautiful, composed of soft moss and hair, with a mass of feathers inside. They lay a large number of eggs, frequently as many as twelve or thirteen, and a nest has been found containing eighteen.

'They are very amusing in their habits, and have such funny climbing, clinging ways, hanging to the bricks and mortar of houses.

'A friend of mine suspended some thread from his window to a tree close by, and then fastened some pieces of bread upon it; it was most amusing to watch one of the little birds taking a hearty meal, and all the time clinging fast to the thread. In some parts of England the blue titmouse goes by the name of pick-cheese.'

'I think,' said Harry, 'that there must be a bird's nest in the hedge opposite to my bed-room

window; I see a pair of small brown birds constantly flying in and out; may we go and look?'

'Certainly you may, and I have no doubt we can find it.'

Harry beat about the hedge with a stick, and out flew a little hedge-sparrow, or hedge-*warbler*, as they are frequently called, from their low musical notes. We soon found the nest, and in it were four bright blue eggs.

Harry wished to take them, but I told him that I thought it cruel to deprive the poor birds of their home, upon which they had bestowed so much trouble.

'Look how anxiously the poor mother is watching us; we will come away at once, and then she can return to her charge.

'As we walk on, I will tell you about a pair of hedge-sparrows that built in this same spot ten years ago, and after you have heard my tale, I think you will never again wish to take birds' nests or eggs.

'I must tell you first that I had a large black cat then, and I noticed that every morning he walked down the garden, and up to this hedge; he would stay there for hours together, rolling over and over on the gravel walk. About a week afterwards I was watching him as usual, and wondering why he had taken such a fancy to that particular spot, when all in a moment he sprang into the hedge, and brought out in his mouth a poor little hedge-sparrow;

as soon as he had eaten this he caught another, and twice more he returned to the same spot, each time bringing back in great triumph a fresh bird. I tried to prevent his cruel sport, but all in vain, for puss would not let me have a moment's peace until he had caught them all. *Now* I perceived his object in keeping near the hedge all day; he was very cunning, for he did not wish to eat them whilst they were small, but kept guard over them, ready to spring upon them the moment he heard the first trial flap of their wings. It was very touching to witness the grief of the parent birds; they flew round and round my cruel cat, uttering piteous cries at seeing their much-loved children thus devoured, and they had no power to help them, although they seemed many times as if they must do something to rescue their treasures; for they flew close to the cat's head, and I thought that they were going to peck him, but alas! their courage failed against such a formidable foe. All the rest of the day the poor old birds continued their mournful wailing, constantly flying back to their empty nest; I had no idea before this happened that they felt the loss of their young ones so keenly.'

Annie's eyes were filled with tears, and Harry seemed much touched. 'I am so glad that I did not take the nest, Aunt,' he said, 'I felt vexed when you prevented me, but I might have known that you had a good reason for hurrying me away, for

you always are so kind in indulging us whenever you can.'

'Oh, Auntie!' he suddenly exclaimed in an altered tone and manner; 'do look at this thorn-bush; who can have been so cruel as to stick all these insects upon the sharp points? and a little further on there are two frogs, and even a poor mouse fastened on the thorns in the same way; how hard-hearted the person must be who could torment all these poor things so cruelly.'

'The mischief is not done by a human being, but by a bird, which from the fierceness of its disposition is called the *butcher*-bird. They seize their victims in great numbers, and then pin them one after another upon thorns; grasshoppers and beetles are their chief food, but as you see they will also catch frogs and mice, and have been even seen pinning hedge-sparrows and linnets.

'A gentleman in America actually saw them taking his pet birds from their cages, which were hanging outside his windows. It is certain that they will kill a far greater number of living things than they can possibly eat, for they have been seen all the day long seizing and destroying insects, and then fixing them upon the hedges.

'But their cruel nature has sometimes proved very beneficial, and this shows that no such instinct is given in vain. In the year 1829 these *shrikes*, as they are commonly called, performed a

really good work, for the coasts of Africa were visited with a great plague of locusts which threatened to destroy all the crops, and to cause a famine; but just as these fears were being entertained, vast flights of a species of the butcher-bird made their appearance, and the swarms of locusts quickly vanished; the numbers which they killed and pinned on the hedges was truly marvellous, far exceeding all the efforts which man had made to destroy them.

'They have sharp notched bills, with which they strike and kill their prey. They may be easily tamed if taken when young, and thus many experiments have been tried; one of these birds was put into a room where a thorn-bush had been placed, and upon giving it some dead mice, it immediately seized one of them, and with the greatest ease and skilfulness pinned it on a sharp pointed thorn.'

'Is it true, Aunt,' inquired Harry, 'that the Chinese eat birds' nests?' I should not like to dine with them if they eat such queer, nasty things.'

'It is quite true, my dear boy; but the birds' nests of which they are so fond are of quite a different kind from *ours*, which are all made either of sticks, moss, or clay; the nests *they* eat are composed of a clear and shining sort of gum, something like isinglass; it is mixed in their soups and considered very nourishing. This sticky substance is collected by the bird (an Indian swallow) from a

sort of jelly-fish, peculiar to the coasts of Java and the adjoining islands.

'The nests are found in deep holes in the rocks; they are very difficult to procure, and lives are often lost in searching for them; the price for which they are sold in the market is enormous; only very wealthy people can afford to buy them. A Chinese feast is a very grand affair, it lasts for hours, as they have such a variety of courses, and birds'-nest soup is generally one of them. They like nothing to be cold—even warming their wine.

'Perhaps you know that it is from China we have our tea. They have large gardens of the tea-plant, which bears a little white flower. Many of the Chinese people are too poor to buy tea-leaves; they use fern-leaves instead. They make their tea in a very different way from us, having no tea-pot, cream-jug, or sugar-basin. They simply put a few leaves in a cup, upon which they pour boiling water, and then cover them over until they are well soaked. If ever you pay a visit to China, a cup of this, their favourite beverage, will at once be offered to you. But we must not talk any more about the Chinese; we will now return to *home* subjects.'

Presently, Harry, who was a little way ahead of us, started a fine hare. Annie turned very pale, and seemed much frightened. I asked her why she was alarmed at such a trifling occurrence.

'It has spoilt all my pleasure,' she replied;

'Nurse said that it was an *evil omen*, and always foretold some dreadful accident or misfortune.'

'I am very sorry that you are so superstitious, for it is *quite* impossible that a poor, timid little animal like the hare can possess any power of causing misfortunes. I have had them cross my path, close under my feet, several times before, and nothing dreadful has ever happened.'

Harry now returned, with a flushed face and quite out of breath, from his chase after the hare. Again he wished that he had his dog with him, as he was sure that Prince would have caught the hare. He asked me if he might bring him next summer. I gave my consent to his eager request, although I had no great wish to include a dog in my invitation; but it always gave me much pleasure to oblige my little nephew and niece whenever I could, as they were very good and obedient children, and very little trouble.

'Please, Auntie, tell us something about hares,' exclaimed Harry; 'and I never saw any *black* rabbits before I came here,' he continued abruptly, 'nor yet any *black* swans. What beautiful birds they are, with their bright scarlet legs and throats. They seem so conceited, as if they were proud of their handsome appearance. What a number of beautiful and curious things you have! When I am a man, I shall have some black swans, and some black rabbits too. Annie shall keep house for me, and then

we will have a cabinet, and make a collection of insects, and all sorts of strange things like yours. *You* must come and stay with us then, Auntie, and help us to make the collection.'

'I shall be delighted to stay with you when you have a house of your own, Harry; and then perhaps you can keep a tame hare, as Cowper, one of our great and good poets, did.'

'Oh, auntie! please tell us how he tamed such a timid animal,' cried Annie.

'I will give you an account of it, my dear, as I remember having read it in a memoir of Cowper's life.

'It is just about a hundred years ago, and this good man was in a very delicate state of health—too ill to amuse himself with his books, which formed his favourite employment. A kind neighbour, pitying his sad condition, offered him a leveret, which, as you know, is a young hare. It was then about three months old.

'Cowper was delighted with the idea of trying to tame it, for he was a very tender-hearted man, and knew that the poor frightened animal had led a miserable life with his friend's children, who, I am sorry to say, were very fond of teasing it. Cowper was a great favourite in the neighbourhood, and when it was known that he was pleased with the leveret, he soon had many more offered to him—more, indeed, than he felt inclined to bring up. He

therefore chose three, and gave them the names of Puss, Tiny, and Bess. A warm, comfortable house was built for them, with a separate room for each, and a long passage from end to end.

'Puss was the favourite with his master. He had a very gentle disposition, and quickly became quite tame and sociable. Cowper often carried him about in his arms, and the hare would sleep upon his knee like a cat. This pet was once very ill for a few days, and when recovered he expressed his thanks by licking his master's hands as a dog does when pleased.

'Every morning Puss was taken into the garden, where he would hide himself under a cucumber vine, the leaves of which formed his favourite food. He knew the time that Cowper was accustomed to take him out, and would become very impatient if he had to wait longer than usual, pulling his master's coat violently between his teeth, and drumming upon his knee.

'Tiny's character was very different, for he was morose and sour-tempered, never seeming in the least grateful for any kindness bestowed upon him; he would not even allow his gentle owner to touch him, but would bite, grunt, and strike at him with his fore-feet.

'Bess had a very bold enterprising nature, never being daunted at anything; he—for they were all males—was tame from the very first, and was

a most amusing hare, full of droll tricks. Every evening they were all three admitted into the parlour, and seemed thoroughly to appreciate the carpet, for it afforded a firm hold for their feet, and they would frisk and gambol about in great glee.

'One evening the cat was in the room, and she had the impudence to pat Bess upon the face, which liberty he resented most indignantly, and drummed upon her back with such violence that the cat was glad to make her escape from the room. Poor Bess died whilst young, having caught cold by being put into his house when it was damp from being washed. Tiny lived nine years, and died from a severe bruise in his body, occasioned by a heavy fall.

Puss (the gentle, affectionate animal) lived eleven years and eleven months, and died quietly, without any pain, from old age.

'Cowper was anxious to discover whether hares were naturally afraid of dogs; he therefore one day introduced to Puss with great caution a spaniel that had never seen a hare; the result was very satisfactory, for the hare showed no signs of fear, nor the dog of rage or dislike; they were quite sociable and friendly, and would eat bread at the same time from their master's hand.

'These three hares, as I told you, had each a distinct character, and their countenances expressed their different dispositions so plainly that Cowper

could distinguish them at once—one from the other—by merely looking at their faces. In the same way a shepherd knows every member of his flock, however numerous they may be; and so also the Lord Jesus—who calls Himself by the tender name of the Good Shepherd—looks upon and recognises every lamb of His fold; and is it not a happiness to feel that His eye is ever thus fixed upon us, and that He will safely lead and guard all that put their trust in Him?

'Perhaps you may like to know upon what Cowper fed his pets. He found that they were very fond of sow-thistle, dandelion, and lettuce; also blades and stalks of corn, but not the ears. He often gave them bread, mixed with carrot and rinds of apple, as he found that they required a change of food. They were very pleased with sprigs of hawthorn and wild briar, the wood of which they would even eat when of a considerable thickness; they also devoured voraciously fine white sand.

'Cowper wrote some very pretty poetry about his pets. I will read it to you by-and-by.'

'I am so glad that wasps have not come out yet, Auntie,' said Annie; 'they have such a disagreeable way of flying round and round close to people's faces; it seems a pity that so handsome an insect should cause such annoyance and pain. When I was quite a little girl, I remember being terribly

stung on my elbow; I was drawing the outline of a picture at the window, and crushed a wasp. I have always been afraid of them ever since.'

'I think most persons would agree with you in your fears,' I answered; 'they are often very troublesome insects, but they, doubtless, have their use in the world. They construct very curious and ingenious nests, of a variety of shapes, generally in a hole in the ground, but at other times suspended from trees.

'The first time I saw one of these hanging nests was when I was staying with your papa and mamma in Monmouthshire; we were walking out, and saw on the top of an ivy-covered wall what we thought was a large ball, as it was close by a friend's house, where there were a number of children; we supposed that they had thrown up their ball, and lost it, for it was half hidden amongst the thick leaves of the ivy. Your mamma tried to knock it down with a stick, and in a moment out flew a swarm of wasps; we ran off as quickly as possible, but your mamma was stung in the eye. We thought ourselves very lucky to escape as we did, for sometimes these nests contain as many as thirty or forty thousand wasps.

'Their habits are very similar in many respects to those of the bee, but they lay by no store of food for the winter; as soon as the cold weather sets in, almost all these vast colonies perish, with the excep-

tion of a few of the youngest and strongest wasps, which live through the wintry season in a torpid state.

'In each nest, there are from fifteen to sixteen thousand cells; as each egg is hatched, the queen-wasp, like the queen-bee, lays another in its place. I saw a great number of these beautiful ball-shaped nests in Monmouthshire.

'Your papa's man-servant managed to obtain one in a perfect state, which I will now describe to you. It resembled a lengthened ball, and the substance of which it was composed looked like thin tissue paper, of a grey colour; there were many different shades, and it was streaked with white, which gave it a marbled appearance. After a time we completely exterminated all the inhabitants from the nest, and then cut it open; the interior was, indeed, a marvellous work; row upon row of cells, all formed of the same paper-like material as the outside. The honeycombs were composed of double rows of these cells, and supported on all sides by numerous pillars and platforms. There were two openings or door-ways, just of sufficient width to admit one wasp at a time; it is said that these insects always enter the nest by one door, and leave by the other.

'For a long time it puzzled every one as to how the wasps obtained the paper of which their homes were formed; it is now ascertained that it consists

of small *fibres*, which they strip off from wood; not *chips*, which would make saw-dust, and also would not interlace; experiments have been tried by giving them real paper, with which the insects appeared well satisfied.

'The window-casement of a gentleman in Paris was much injured by a swarm of wasps, which built in his garden; they also spoilt the paper on his walls; on watching them at work, he found that they bit off fine fibres with their teeth, working with the greatest activity. The wasps did not swallow the material, but gathered it in great quantities, and then placed it between their legs; when making the paper balls, they work with their feet, and moisten the substance with a gum from their mouths.'

As soon as I finished speaking, I heard an exclamation of surprise from Harry; upon inquiring the cause, he said,—

'Why, I never saw anything so curious, I touched something which I thought was a piece of stick, and it first moved gently, and then opening a pair of beautiful wings, it flew away! I cannot understand it at all, nor guess what it could be.'

'It was a moth,' I replied; 'it has, indeed, a very remarkable appearance when motionless, and, as you say, looks exactly like a piece of stick, sloped off at each end. It is a handsome insect, if seen with its wings opened; and is called the *buff*-tip moth, from its upper wings being marked with a

deep yellow colour; it might be called the monkey-faced moth, I think, for the shape of its head strikingly resembles that mischievous animal.'

'I can see a pretty robin's pin-cushion upon that wild rose-bud,' cried Annie; 'how I wish I could reach it; it is such a deep red colour; the prettiest that I have ever seen.'

'I will get it for you,' said Harry, and suiting the action to the words, he climbed up the bank, and soon placed the wished-for treasure in his sister's hands.

'What a clever little bird the robin must be, to make these nice pin-cushions!' observed Annie; 'I wonder what they form them of, and for what purpose; can you tell me, Auntie?'

'They are not made by robins at all; it is the work of an insect, a member of the same family as those that inhabit the oak-apples. There are several different species of these boring insects; each chooses its own peculiar bush or tree, in which to lay its eggs. We will cut open the ragged robin, which is the correct name of the treasure you are holding.'

The children were much interested in the numerous little cells in the interior, each one containing a tiny grub; after they had examined it carefully, I pointed out to them a fresh object of interest, in the shape of a small patch of white froth upon the hedge, and told them that this also was the work of an insect, called a frog-hopper; and that the frothy

substance was commonly known as cuckoo spit. I removed the soft white covering, that my little charges might see the insect within, which was very small, and of a green colour.

We then walked on again, and presently we heard a most pitiful yelping noise, as of a dog in distress.

'It seems as if it came from this large hole in the bank,' said Harry; 'and here is a dead rabbit,' he continued.

It now occurred to me that it must be, as Harry said, a poor dog; which in scraping a long, deep hole, while searching for a rabbit, had gone so far in his eager excitement, that he could not turn himself round to get out again.

Harry ran off to ask the gardener to bring a spade, and by dint of hard digging, he at length succeeded in setting the exhausted animal free. To our surprise he had in his mouth *another* rabbit; he looked terribly ashamed, and slunk off at once, carrying his prize in his mouth. I picked up the the other rabbit and gave it to my gardener. Upon looking at my watch, I was surprised to see how late it was; it had taken longer than I had supposed to dig out the poor dog, and I felt that we must now return home. As usual the children wished to look for fresh curiosities, and were disappointed at the idea of returning, so I gave them leave to stay out by themselves a little longer, and they decided to

pass away the time in feeding my poultry, some of which were very tame, and would take food from our hands.

One of my hens had a very peculiar and uncommon taste, that of catching mice; she would run after them in a great state of excitement, and when caught she would carry her prize off in triumph. As we entered the yard, we saw her in full chase of a poor little mouse, which, however, was fortunate enough to escape, much to mistress hen's disappointment and rage.

I now left my nephew and niece, who were busily occupied in trying to soothe the irritated feelings of the defeated fowl, by offering her food of the most tempting kind that they could think of, and after a time she condescended graciously to receive it. Half-an-hour thus passed away quickly and pleasantly, they then came in, hot and tired, and glad to rest quietly till dinner, after which I had promised to take them for a nice long country drive.

While they were resting, I fulfilled my promise, and read aloud Cowper's simple and touching lines.

Epitaph on a Hare.

'Here lies, whom hound did ne'er pursue,
Nor swifter greyhound follow,
Whose foot ne'er tainted morning dew,
Nor ear heard huntsman's hallo.

Old Tiny, surliest of his kind,
  Who, nursed with tender care,
And to domestic bounds confined,
  Was still a wild Jack hare.

Though duly from my hand he took
  His pittance every night,
He did it with a jealous look,
  And, when he could, would bite.

His diet was of wheaten bread,
  And milk, and oats, and straw;
Thistles, or lettuces instead,
  With sand to scour his maw.

On twigs of hawthorn he regaled,
  On pippins' russet peel,
And, when his juicy salads failed,
  Sliced carrot pleased him well.

A Turkey carpet was his lawn,
  Whereon he loved to bound,
To skip and gambol like a fawn,
  And swing himself around.

His frisking was at evening hours,
  For then he lost his fear,
But most before approaching showers,
  Or when a storm drew near.

Eight years and five round rolling moons,
  He thus saw steal away,
Dozing out all his idle noons,
  And every night at play.

I kept him for his humour's sake,
  For he would oft beguile
My heart of thoughts, that made it ache,
  And force me to a smile.

But now beneath his walnut shade
  He finds his long last home,
And waits, in snug concealment laid,
  Till gentler Puss shall come.

He, still more aged, feels the shocks,
  From which no care can save,
And, partner once of Tiny's box,
  Must soon partake his grave.'

CHAPTER VII.

My little charges did not set off quite so eagerly on this, the last day of our Home-tour; they both wished it could have lasted another week, saying that they had never known the days to pass away so quickly and pleasantly, as they had done during their visit to me. They both agreed that it was far nicer than their tour to the Lakes, the year before.

I promised that they should come and see me again the following summer, and that then we would make a collection of insects. They were charmed with this idea, and talked over many possible, and I must add *impossible* schemes.

'As this is our last day, Auntie,' said Harry, 'will you please stay out a *very* long time, for I am sure there are great many more insects and animals which we should like to hear about?' I promised him that I would do my best to make their last day the longest and the most interesting.

We now heard the cuckoo's note sounding loudly, yet hoarse and unnatural; it appeared to

·ı the direction of the park; and as the
ıad never seen a cuckoo, we bent our steps
. hoping we might be fortunate enough to
'mpse of him.

·ems to have a cold, or a sore-throat,' re-
.nnie; 'I never heard one make such a
·e before.'

always thus alter their note in the summer
ıy dear, before they leave us again for
nds. They sing all the day long in May,
ıill late at night their loud cheery voice may
·eard. Some people say that this hoarse-
·ing to their unceasing exertions in crying
' but this seems doubtful, as it is the only
is known to be thus affected, although many
as untiring in their efforts.'

·ı taught me some funny rhymes about
·oo; shall I say them, Aunt?' asked

hould like very much to hear them,' I
'. Harry at once repeated the following

'In April come he will,
In May he sings all day,
In June he alters his tune,
In July he prepares to fly,
In August go he must.'

ıny little nephew finished these well-known

sayings, a large bird flew off a tree at some distance from us.

'Is that the cuckoo?' exclaimed both the children in one breath.

'Yes, my dears; you see he is very much like a hawk in shape and size; indeed, so close is the resemblance that the one is often mistaken for the other.'

'Is it true,' inquired Harry, 'that the cuckoo makes no nest of her own, but that she lays her egg in the most convenient one she can find, and then takes no more care or thought about it?'

'It is quite correct, Harry; the cuckoo always chooses the nest of a bird much smaller than herself wherein to place her egg, which is of a small size for such a large bird, not being quite so big as the egg of a hedge-sparrow; she then takes no further trouble about it. The preference is generally given to the nest of a wagtail, a hedge-sparrow, or a yellow-hammer; of course the young cuckoo is much stronger than his companions, and he very soon pushes them all out of the nest by lifting them on his shoulders, which for the first twelve days have a hollow place between them, apparently for this purpose; for after these days the cavity closes up, and it has been observed that if the proper occupants of the nest remain until that time, the young cuckoo does not interfere with them. The birds in whose nest the intruder has been hatched, finding

themselves thus deprived of their natural offspring, take the greatest care of their foster-child, feeding it as tenderly, and bestowing as much love upon it as if it were one of their own children instead of a cruel murderer and supplanter.

'I have a cuckoo's egg in my cabinet which I will show to you when we return home; I found it in a very curious place, upon the top of a stone-heap. Sometimes one of these eggs has been found as late in the year as August; and if it be true that the young cuckoo is the most backward of all birds in feeding and taking care of itself,—some people asserting that for two months it depends entirely upon its foster-parents,—then it follows of course that the poor little late-hatched cuckoo cannot possibly leave England with the general flight. It seems to me that this fact will quite account for these birds being often shot in September, and even in October; occasionally also they have been killed by sportsmen when snow is on the ground.

'These late-hatched birds evidently stay here through the winter, creeping into hollow trees, or other warm hiding-places, where they remain in a torpid state. This circumstance fully corroborates the truthfulness of a tale which was related by Willoughby, a famous naturalist, who lived about two hundred years ago.

'He said that "some old, dry, rotten willows which had been stored up were used as firewood,

and to the surprise of the family as soon as two logs were put upon the fire they heard the well-known voice of the cuckoo singing three times. The servants took the logs off the fire, and in the middle of one of them they saw something moving; upon thrusting in the hand, at first nothing but feathers were plucked out; afterwards a cuckoo was found, brisk and lively, though quite bare of feathers. There was no appearance of any winter provision stored in its hiding-place; the warmth of the fire had evidently roused it up from the torpor in which it would have passed through the cold season, if undisturbed." Late broods of swallows have also been found in the depth of winter, hidden in trees, thatched roofs, and other warm retreats. Some workmen in excavating a railway near Chesterfield a few years ago, came upon a great number of swallows in a torpid state.'

'What a mass of rooks' nests there are in your park, Aunt,' observed Harry; 'I always think rooks seem very conceited, they strut about as if they thought themselves far superior to any other birds. Is there any difference between a rook and a crow, for sometimes I have heard them called *rooks* and sometimes *crows*?'

'The difference is so very slight that it would not be noticed, except by a careful observer; a crow is entirely black, but a rook has a light patch at the end of the bill, where it grows out of the head.

'The crow is also more active, being awake in the morning and out on the wing long before the lazy rook thinks of stirring; moreover, not only is he early in rising, he is most energetic and untiring at night, for he is the latest of all birds in going to roost, in fact, he is as different in his habits and character from the rook as a hare is from a mouse.

'He is not a sociable bird, for, as a rule, he is almost invariably seen alone, although sometimes in the evening, towards autumn, he may be seen with about a dozen friends, all making an incessant talking before they seek their night's rest.

'But Mister Crow has his good qualities, being a pattern husband and father; he never wearies of feeding his hungry brood, which is no light task, for the quantity of food that they consume is astonishing. When hard put to it, to supply their voracious appetites, he pounces upon young pheasants, partridges, and rabbits, even seizing young ducks from the ponds, and stealing eggs from hens' nests.

'I am sorry to say that this bird is very barbarous, for if he sees a sheep or a lamb fallen on its back—as is sometimes the case—he will pounce down upon the unfortunate animal, and immediately begin his attack by pecking out its eyes.

'The farmers are very bitter against him, but they ought to remember the great good that he does in devouring vast numbers of insects, gobbling them up one after the other, as fast as he can swallow

them. The cockchafer grubs are amongst his favourite food; you have not forgotten the insects I mean,' I said, giving Annie a sly glance.

'No, indeed, Auntie; I shall never wish to pull up roots of dead grass again; those grubs were such horrid-looking things that I do not care to try that experiment any more.'

'The crow,' I continued, 'is a very cunning bird, in which respect he bears a strong resemblance to the raven. I have seen him take shell-fish in his bill to the top of high cliffs by the sea-shore, and then drop them down to break the shells, which he found too hard to crack with his bill.

'Your grandpapa lived at Heacham, near the Hunstanton coast, for many years, where there are, every winter, a great number of the hooded-grey, or Royston crows; they are natives of Scotland, and during the cold season they frequently visit our shores in large flocks, leaving us early in the spring, before the swallow arrives. The hooded-crow is larger and handsomer than our crow, having beautiful grey feathers upon its back and head; but I was going to tell you about their visits and habits.

'Your grandpapa had two handsome curly-coated dogs, one of which came astray, following your mamma when she was a little girl. Every day these two animals had their dinners out-of-doors, and the hooded-crows very cleverly knew the time that the dogs dined; they would sit waiting

and watching on the tops of the tall trees close by. Most amusing was it to see the fights between them and the dogs; it generally began by one or two of these pompous-looking birds flying down, and sideling along in a peculiar manner, close up to the dogs; they immediately returned the insult by furious growls and snarls. Soon one of the courageous birds would make a dart at the plate, and then began the fun; the dogs would rush at him to chase him off, and the other crows, quick as thought, would hop up to the dogs' dinner, and each fly away with a prize. Day after day during the winter these fights would take place.

'Crows resemble ravens in their love of pilfering. I have read a curious tale of this failing of theirs. A gentleman left a pack of cards upon his table, and went out for a walk, leaving the window open; when he returned the cards were nowhere to be seen; some time after he found them carefully arranged, faces upwards, upon his garden wall. He was puzzled at first, but after a little thought he solved the mystery, and enjoyed a hearty laugh at the crows' clever trick.

'Rooks and crows may be easily tamed, if taken when young; one of the latter birds was kept for a long time as a pet, but at length it disappeared. About a year afterwards the young man who tamed it was taking a walk, when a crow came flying towards him, and perched on his shoulder. He

recognised the bird as his lost pet; but although still so tame and affectionate, it did not intend to stay with its former master, for it flew away again, and returned no more.

'I have read many interesting tales about crows and rooks, but I will only tell you one more. A farmer rented a house in Essex, and he had not long been in possession of his farm before a number of rooks took a fancy to his trees, and in the course of four years they had formed a large rookery. At the end of that time he hired a larger farm, feeling much regret at leaving his winged friends behind him; but, to his great surprise and pleasure, the whole colony had become so much attached to him that they actually left their former quarters, and accompanied him to his new abode, which was not quite a mile off, and they stationed themselves happily again on his premises.

'Rooks have been known to take as strong and as sudden a *dislike* to particular spots, even after having sometimes nearly completed their nests they will fly away, and never return again, for reasons best known to themselves.

'Every rookery is governed by regular laws, and the occupants evidently possess a language of their own, which is well understood by all the community; they manifest great affection towards each other, and should one of their comrades be wounded or killed they will display the greatest anxiety and

sympathy, uttering piercing cries and trying to assist him by hovering over, or darting down close to him, apparently puzzled to find that their injured companion cannot follow them; if only wounded they try to rouse him up, by flying to a little distance in front, and calling him by incessant cries to accompany them.

'If a dead rook be hung to a stake in a field as a warning to keep off the rest of the colony by the sight of their friend's untimely end, the neighbouring rooks sometimes visit him; but when at length they find that he is actually dead they will leave him to his fate. But it is ill policy thus to endeavour to exterminate these birds, for it is certain that they do more good than harm to the crops.

'A reward was once offered in America of three pence a dozen for all the birds of a similar species to our rooks that could be destroyed; the consequence was that no sooner were the so-called pests rooted out, than the whole face of the country became infested with noxious insects, which injured the crops so much that the people were obliged to send to England, and to other distant countries to get food and grain.

'If our farmers would only take the trouble, they could soon satisfy themselves that rooks are their best friends in clearing fields from one of our greatest scourges, the wire-worm. This insect eats its way into the heart of the roots of the grain,

burying itself some inches underground; the rook is its particular and almost sole devourer, for being possessed of a very strong and long bill, he is enabled to unearth the wire-worm, from depths to which birds with shorter bills are unable to penetrate.

'If watched by a *careless* observer, the poor rook will be strongly condemned when seen pulling up root after root of the springing crop; but if the work were to be examined minutely there would be found, in most of these roots, the cell of a wire-worm; it is only the yellow, unhealthy-looking stems which the sagacious bird pulls up. The sight or scent, or whatever faculty it may be, by which they discover their favourite food, is truly marvellous; while flying over the country they will suddenly descend upon a field, evidently discerning the presence of their prey, and at once begin their beneficial work of clearing off the wire-worm.

'It is said that a rookery sometimes contains upwards of a thousand nests, and an instance is recorded of above two thousand.

'Occasionally they will meet in extraordinary numbers, and consult together, a few of them sitting with drooping heads, as if filled with shame or remorse, others looking grave as judges, while the rest are active and noisy. These meetings have been known to last for a day or two, before

they seem able to settle the point under discussion; during this time fresh reinforcements arrive from all parts, and it is usually ended by the whole vast assemblage falling upon one or more unfortunate birds and pecking them to death; when this is over they quietly disperse again.

'Sometimes they make choice of very odd spots for building; on the top of a steeple, or even on a spire, or on a vane, where they somehow manage to secure the nest so firmly that neither can wind blow it down, nor the ever-turning vane discompose it.

'But I have now told you quite enough about rooks and crows, much more than I should have done had not you both wished to stay out for a longer time to-day than you have before during our past tour.'

'May we go quite through the wood, Auntie?' asked my little niece, in an eager voice. I consented at once to her request, and we walked quickly on again.

Presently we heard a great squeaking and scuffling, as of some animals struggling together, and immediately afterwards a leveret crossed our path, moving with great difficulty, owing to a burden hanging on its neck, in the shape of a small animal, which evidently greatly impeded its progress.

'What a curious little creature!' exclaimed Harry. 'What is it, Aunt? and why does not the leveret shake it off?'

'It is a weasel, my dear; the poor leveret would willingly shake it off if it could do so, but that is quite impossible, and the unfortunate creature will soon be killed by an animal much smaller than itself.

'The weasel is famed as a hunter; it uses its bright eyes and quick-scented nose in pursuing its prey, which it tracks like a well-trained dog, and seldom fails to secure its victim, scenting it along the ground through every winding path. Its chief food consists of mice and other small animals, but it has no objection to vary its meal by catching chickens, ducklings, or young pheasants, &c., and, as you see, occasionally it relishes a leveret.

'It has a very long body and neck, and a set of sharp, powerful teeth, which inflict fierce and deep wounds; it can spring to a great distance, and climb almost anywhere, being unrivalled in activity.

'Weasels have been known to attack even men, always directing their efforts to the throat, whether their foe be man or beast. I have read of one instance in which a person was beset, and terribly bitten, by fifteen of these little animals. They are very peculiar-looking from their great length; the body,—tail included,—being seven or eight inches long; the back is of a dark brown colour, and the stomach is white.

'In winter the weasel usually lives in barns or granaries, where it brings up its young. It carries

on a more successful war against rats and mice than any cat can do; for with its snake-like body it can follow its prey into the smallest holes. In the spring it comes forth from its hiding-place, and again frequents the banks of rivers and brooks, or else conceals itself in thickets.

'It is a very difficult animal to tame, and when captured it remains for a long time in a perpetual state of terror and agitation, hiding itself in frantic haste if it be approached by any one. *When* quite tame it forms an agreeable pet, with one great exception, and that is, the unpleasant odour which always accompanies the different species of the weasel tribe.

'In foreign lands there are some members of this family, the scent from which is so strong, that it has been known to infect a whole village, and even to cause fainting; it also taints any provisions in its vicinity.

'Your uncle in India has often written to me about the musk-rat, which is a great source of annoyance in that country; if this creature simply runs across a barrel of beer, it taints the contents in such a way as to render the beer unfit for use. How thankful we ought to be that our land is free from many of the pests to which hotter climes are subjected!

'It is marvellous how God, in His wise providence, has provided suitable natures and coverings for the various necessities of each animal peculiar

to different climates. The delicate sheep has a warm woollen coat, to enable it to live through our cold winters; but if taken to sultry Africa, it loses its wool, and nature provides it instead with a covering of black hair. Thick-coated dogs also quite lose their cumbersome clothing, their skin becoming smooth and bare, and pigs have been known in these hot regions to undergo a similar change. Even in England the latter animals soon alter in disposition and form, if turned out to wander in thick woods, until after a few generations, they change into furious wild boars of the forest, with war-like tusks, erect ears, and raised and broadened head.

'We thus see what great alterations take place in animals by a change of abode or climate; and I often think that the same causes, acting through long ages, will also account for many of the varieties which exist in the human species; men and women of different shades of colour, with different hair and features, &c.

'I always pity the poor unfortunate polar-bear, —to be seen in some menageries—during the hot weather. I have noticed that he seems to be perfectly maddened with the heat; constantly moving from side to side in his pent-up domain. Poor fellow! I suppose the only time at which he feels any small degree of comfort is, when we have sharp frosts and snow.

'The hand of the Almighty is wonderfully dis-

played in the remarkable adaptation of the *teeth* of the various classes of animals to the nature of the food appointed for their sustenance; so marked is their form and arrangement, that a scientific man, who has made this subject his study, can usually tell by examining any tooth given to him, the nature and habits of the animal to which it belonged.

'Squirrels, for instance, have strong teeth suited for gnawing shell-fruits; animals that feed upon soft fruit have quite a different set; also again for those that feed upon flesh, and for those that eat only herbs,—from the largest animal to the smallest, —the same gracious care has equally provided for all their various wants.'

'Have you ever seen a hedgehog, Aunt?' inquired Annie.

'Yes, my dear; he is a funny little creature, especially if you find him coiled up in a ball, as his habit is when frightened; his sharp spines are then a perfect safe-guard from the attacks of most of his foes; it is amusing to see a dog snarling and sneering at him; if he succeeds in mastering the hedgehog, it is only at the cost of a severely wounded nose.

'In London they are sometimes kept as pets to destroy cockchafers and black beetles, of which they are very fond; they eat also slugs and snails, and will even kill and devour snakes.

'In winter the hedgehog burrows in the ground, and becomes torpid. He is generally about nine inches in length, he has a short tail, and a sharp pointed head or nose; his feet are armed with long claws, and his legs are short and almost bare. The flesh is well-flavoured and considered a delicacy abroad, but in England none but gipsies would think of making such a meal.'

Annie now uttered a little scream of dismay; she had set her foot upon a beetle, but the creature did not appear at all the worse for the pressure, which rather surprised the children. I told them that in this respect many insects resembled cats, which are always supposed to have *nine* lives. Beetles, moths, and worms certainly appear to have a very strong hold upon life; it is extremely difficult to kill large moths, for after remaining apparently lifeless for many hours,—stretched with pins upon a board for preservation,—they will frequently revive and flutter their wings: indeed, so often have I been deceived in this way, that I have almost resolved never again to set a large moth.

'I once saw a striking instance of the strong hold that cats retain upon life, enabling them to pass through perils, which would cause the death of other animals. We were out for a drive one day in a large, heavy four-wheeled chaise, when a cat ran across the road and under the wheels, two of

which passed quite over her, completely flattening poor pussy on the ground; the vehicle was going down a hill, and I was walking behind at the time, which enabled me to see the whole affair quite plainly. I felt horrified at what I concluded to be the untimely end of the poor animal; but to my great surprise, the cat jumped up as if nothing had happened, and ran away, apparently not the least hurt!'

When I had finished this tale, in which my little nephew and niece were much interested, we passed by a nut-bush, and Harry asked me if I could tell him about the maggots in nuts, and how they came there, as he said that he had often found them shut up inside the shell.

'The mischief is done by a little beetle, called the nut-weevil (fig. 17). I have read that this insect bores a hole through the nut-shell, in which she deposits an egg. When hatched it becomes the little white maggot which you have so often seen. Master Grub feeds upon the kernel (fig. 17a), and turns it into a mass of bitterness. As he grows, he enlarges the hole which his mother made for his entrance, that it may be large enough for him to leave the little prison when he is full-grown. This always happens in the autumn, when the injured nut falls to the ground. The grub at once comes forth and buries in the earth, where he remains all the winter.

In the spring he casts his skin, and passes into the chrysalis state (fig. 17 b), coming out in July as a perfect insect (fig. 17 c). The nut-weevil has a very strong and peculiar sort of snout, well suited for this boring work, somewhat in the shape of a three-pronged pitchfork. There are several other kinds of weevils, and all these tiny insects do an immense amount of damage to peas, grains of corn, and to vegetables. In foreign lands also they do much harm to the palm-tree and to the coffee-plant. Another species lives in cork, cutting out little galleries, and filling them with a bitter substance. This it is which often spoils corked wine, and gives it such a disagreeable flavour.'

'Oh, Aunt!' cried Harry, 'what a large nest there is on this small tree!' As he finished speaking, a brown bird with a spotted breast flew out, and settled upon a bush a little distance further off.

'It is a missel-thrush, Harry. They are foolish birds in choosing such open spots for their large, clumsy-looking nests. The eggs, four or five in number, are very pretty, of a greenish, or sometimes a reddish-white colour, spotted with brown. The nest, although outwardly so ugly, is in the interior smooth and soft, and lined with feathers.

'There are over a hundred different species of the thrush family, and I believe that *this* is the largest of them all, measuring, from tip to tip of its

wings, sixteen or seventeen inches. It is naturally a shy bird. We will now walk on again, for it is cruel to keep the poor thing any longer away from its nest, and to cause it so much fright.

'I will now tell you a tale about the common thrush, which occurred when I was staying in Monmouthshire with your papa and mamma. We were startled one morning by hearing a sound as of breaking glass, and on hurrying to ascertain the cause, we found that a thrush had flown with such force against the window, that one of the panes of glass was broken into numerous pieces, the bird falling down in the middle of the room.

'It was the more remarkable as the thrush was not in full flight at the time, but had, as seen by some of the servants, simply launched itself from the boughs of a small tree, which was situated within a yard of the window.

'We picked up the bird and found to our surprise that it was more frightened than hurt, bleeding only a little about the wings and breast; I opened the window, and after a few minutes it flew away. I have also been told of a similar occurrence with regard to a pair of kingfishers. The account was given to our family by a gentleman living near Norwich, whose house is close by a river. He was reading in his dining-room one cold snowy day, when he suddenly heard a heavy blow against the

window; upon jumping up to see what was the cause, he beheld to his surprise two dead kingfishers lying under his window; the birds had dashed against the strong plated glass with great violence, and were killed at once by the shock. They had evidently been attracted by the bright shining fire, for there are other instances recorded of a similar character, of birds dashing against the windows of lighthouses, and meeting with the same fate as these unfortunate kingfishers.

'The gentleman was so much struck with this remarkable circumstance that he had the birds stuffed and placed under a glass shade; they now stand in his drawing-room as a memorial of the event.'

We had by this time walked 'quite through the wood,' according to the request of my little niece; and as I found that it was getting very late, I told the children we must at once return by a shorter path. I had also fulfilled my promise of making our last day's tour the longest of all, and I expressed a hope that it had been as interesting as the other six days.

'Oh, yes, Aunt,' answered Harry; 'and I only wish that we were now beginning, instead of ending what has been the happiest week of our lives; if it is not too much trouble, do tell us just one more tale, please, dear Auntie.'

After thinking for a few minutes I told them

that I would narrate something that I was sure would amuse them both, and pass away the time pleasantly as we walked back.

'I am going to tell you a short tale that your grandpapa told me. Some years ago he had been upon a fishing expedition, and when he returned home he placed his bait—which were gudgeons—in a fish-can filled with water; a very severe frost set in, and the water became a mass of ice. The next morning he cut the fish out with a hatchet, and thinking they were dead he threw them upon a manure-heap, slightly covering them with straw. A few hours afterwards he passed by again, and upon turning over the straw he found, to his great surprise, that the fish were alive and brisk. He then put them into fresh water, where they very soon recovered completely, and seemed none the worse for their contact with Jack Frost.

'The late Sir John Franklin mentioned a similar circumstance. He said that when he was in the Arctic regions the fish froze as they were taken from the nets, becoming in a short time a mass of ice, so hard that it required a hatchet to cut them open. If they were thawed before a fire—even after being frozen for nearly two days—the fish would recover their animation.'

We had now reached the house again, our seven days' 'Home Tour' being completed. I told

my young companions that I had enjoyed it as much as they had done, and that I hoped the study of nature would for the future rank first and highest amongst their other studies and amusements.

'You see, my dears,' I observed, 'what wonderful and interesting objects surround us; every tree, bush, and flower, is full of marvels; indeed, everything in nature proclaims to us the wisdom and goodness of God, the Creator of all. The earth, the sea, the sun, the moon, the stars—all show forth His praise. David might well say, "All Thy works praise Thee, O Lord!" Before we retire to rest this evening we will read together two beautiful psalms (Ps. cxlvii. and cxlviii.), wherein his soul seems overwhelmed with holy rapture in the study of Nature's God. He calls upon the heavens, the earth, the mountains, the fruitful trees, the beasts, the creeping things and flying fowl—all, all, to praise their beneficent Creator and Upholder, who is so "mighty in power that He telleth the number of the stars, and calleth them *all by their names.*"

'No human being can possibly number the smallest part of them, and there are countless millions which no eye but God's hath ever seen.

'I am very glad that you are both convinced that the country is not dull, nor wanting in interest; and I hope you will always endeavour to remember

the lessons you have learned in our "Gleanings from Nature."'

* * * * * *

With sorrowful faces and many regrets, my little charges left me on the following morning, and the last words I heard were, 'Remember, Auntie, your promise to let us come and stay with you again next summer.'

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